

SEQUENCE LISTING

<110> E.I. duPont de Nemours and Company
Genencor International, Inc.
Cervin, Maggie
Soucaille , Philippe
Valle, Fernando

<120> PROCESS FOR THE BIOLOGICAL PRODUCTION OF 1,3-PROPANEDIOL WITH HIGH YIELD

<130> CL2180 US NA

<150> 60/416192

<151> 2002-10-04

<160> 68

<170> PatentIn version 3.1

<210> 1

<211> 1137

<212> DNA

<213> Artificial Sequence

<220>

<223> partial DNA sequence of plasmid pLoxCat27 comprising the LoxP-Cat-LoxP cassette

<400> 1
ctcggatcca ctagtaacgg cgcgcagtgt gctggaattc gcccttggcc gcataacttc 60
gtatagtata cattatacga agttatctag agttgcatgc ctgcagggtcc gaatttctgc 120
cattcatccg cttattatca cttattcagg cgtagcacca ggcgtttaag ggcaccaata 180
actgccttaa aaaaattacg ccccgccctg ccactcatcg cagtactggt gtaattcatt 240
aagcattctg ccgacatgga agccatcaca aacggcatga tgaacctgaa tcgccagcgg 300
catcagcacc ttgtgcctt gcgtataata tttgcccatt gtgaaaacgg gggcgaagaa 360
gttggtccata ttggccacgt ttaaataaaa actggtgaaa ctcacccagg gattggctga 420
gacgaaaaac atattctcaa taaacccttt agggaaatag gccagggttt caccgtaaca 480
cgccacatct tgcgaatata tgtgtagaaa ctgccggaaa tcgtcgtggt attcactcca 540

gagcgatgaa aacgtttcag tttgctcatg gaaaacggtg taacaagggt gaacactatc	600
ccatatcacc agctcaccgt ctttcattgc catacgggaat tccggatgag cattcatcag	660
gcgggcaaga atgtgaataa aggccggata aaacttgtgc ttatTTTTtct ttacggtcctt	720
taaaaaggcc gtaatatcca gctgaacggt ctggttatag gtacattgag caactgactg	780
aaatgcctca aaatgttctt tacgatgcc a ttgggatata tcaacggtgg tatatccagt	840
gattTTTTtcc tccatttttag cttccttagc tcctgaaaat ctcgataact caaaaaatac	900
gccccggtagt gatcttattt cattatggtg aaagttggaa cctcttacgt gccgatcaac	960
gtctcatttt cgccaaaagt tggcccagggt cttcccggta tcaacaggga caccaggatt	1020
tatttatttct gcgaagtgat cttccgtcac aggtatttat tcggactcta gataacttcg	1080
tatagtatac attatacgaa gttatgaagg gcgaattctg cagatatcca tcacact	1137

<210> 2

<211> 61

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer ArCA1

<400> 2

cacattctta tcgttgaaga cgagttggta acacgcaaca cgtgtaggct ggagctgctt	60
c	61

<210> 3

<211> 62

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer ArCA2

<400> 3

ttccagatca ccgcagaagc gataaccttc accgtgaatg gtcatatgaa tatectcctt	60
ag	62

<210> 4

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer Arca3

<400> 4

agttggtaac acgcaacacg caac

24

<210> 5

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer Arca4

<400> 5

cgcagaagcg ataaccttca ccg

23

<210> 6

<211> 1320

<212> DNA

<213> Artificial Sequence

<220>

<223> Partial sequence of pLoxCat1 comprising the lox-Cat-loxP cassette

<400> 6

aagcttaagg tgcacggccc acgtggccac tagtacttct cgaggctcgac ggtatcgata	60
agctggatcc ataacttcgt ataatgtatg ctatacgaag ttatctagag tccgaataaa	120
tacctgtgac ggaagatcac ttcgcagaat aaataaatcc tgggtgtccct gttgataccg	180
ggaagccctg ggccaacttt tggcgaaaat gagacgttga tcggcacgta agaggttcca	240
actttcacca taatgaaata agatcactac cgggcgtatt ttttgagtta tcgagatttt	300
caggagctaa ggaagctaaa atggagaaaa aaatcactgg atataccacc gttgatatat	360
cccaatggca tcgtaaagaa cattttgagg catttcagtc agttgctcaa tgtacctata	420
accagaccgt tcagctggat attacggcct ttttaaagac cgtaaagaaa aataagcaca	480
agtttttatcc ggcctttatt cacattcttg cccgcctgat gaatgctcat ccggaattcc	540
gtatggcaat gaaagacggg gagctggtga tatgggatag tgttcaccct tgttacaccg	600
ttttccatga gcaaactgaa acgttttcat cgctctggag tgaataccac gacgatttcc	660
ggcagtttct acacatatat tcgcaagatg tggcgtgtta cggtgaaaac ctggcctatt	720
tccctaaagg gtttattgag aatatgtttt tcgtctcagc caatccctgg gtgagtttca	780

ccagttttga tttaaacgtg gccaatatgg acaacttctt cgccccggtt ttcacccatgg	840
gcaaataatta tacgcaaggc gacaaggtgc tgatgccgct ggcgattcag gttcatcatg	900
ccgttttgtga tggctttccat gtcggcagaa tgcttaatga attacaacag tactgcatg	960
agtggcaggg cggggcgtaa tttttttaag gcagttattg gtgcccttaa acgcctggtg	1020
ctacgcctga ataagtata ataagcggat gaatggcaga aattcggacc tgcaggcatg	1080
caactctaga taacttcgta taatgtatgc tatacgaagt tatgcggccg ccatatgcat	1140
cctaggccta ttaatatcc ggagtatacg tagccggcta acgttctagc atgcgaaatt	1200
taaagcgctg atatcgatcg cgcgcagatc tgtcatgatg atcattgcaa ttggatccat	1260
atatagggcc cgggggttata attacctcag gtcgacgtcc catggccatt gaattcgtaa	1320

<210> 7

<211> 61

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer GalA

<400> 7

tcggttttca cagttgttac atttcttttc agtaaagtct ggatgcatat ggcggccgca	60
t	61

<210> 8

<211> 65

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer GalP2

<400> 8

catgatgccc tccaatatgg ttatttttta ttgtgaatta gtctgtttcc tgtgtgaaat	60
tggtta	65

<210> 9

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer GlkA

<400> 9
acttagtttg cccagcttgc aaaaggcatc gctgcaattg gatgcatatg gcggccgcat 60

<210> 10

<211> 67

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer Glk2

<400> 10
cattcttcaa ctgctccgct aaagtcaaaa taattctttc tcgtctgttt cctgtgtgaa 60
attgtta 67

<210> 11

<211> 1270

<212> DNA

<213> Artificial Sequence

<220>

<223> LoxP-cat-loxP Trc cassette "insert"

<400> 11
ggatgcatat ggcggccgca taacttcgta tagcatacat tatacgaagt tatctagagt 60
tgcatgcctg caggtccgaa tttctgccat tcatccgctt attatcactt attcaggcgt 120
agcaccaggc gtttaagggc accaataact gccttaaaaa aattacgccc cgccctgcca 180
ctcatcgag tactgttgta attcattaag cattctgccg acatggaagc catcaciaaac 240
ggcatgatga acctgaatcg ccagcggcat cagcaccttg tcgccttgcg tataatattt 300
gccccatggtg aaaacggggg cgaagaagtt gtccatattg gccacgttta aatcaaaact 360
ggtgaaactc acccagggat tggctgagac gaaaaacata ttctcaataa acccttttagg 420
gaaataggcc aggttttcac cgtaacacgc cacatcttgc gaatatatgt gtagaaactg 480
ccggaaatcg tcgtggtatt cactccagag cgatgaaaac gtttcagttt gctcatggaa 540
aacggtgtaa caagggtgaa cactatccca tatcaccagc tcaccgtctt tcattgccat 600
acggaattcc ggatgagcat tcatcaggcg ggcaagaatg tgaataaagg ccggataaaa 660
cttgctgctta tttttcttta cggctcttta aaaggccgta atatccagct gaacgggtctg 720
gttataggta cattgagcaa ctgactgaaa tgcctcaaaa tggtctttac gatgccattg 780

ggatatatca acggtggtat atccagtgat ttttttctcc atttttagctt ccttagctcc	840
tgaaaatctc gataactcaa aaaatacgcc cggtagtgat cttatttcat tatggtgaaa	900
gttggaacct cttacgtgcc gatcaacgtc tcattttcgc caaaagttgg cccagggctt	960
cccggtatca acagggacac caggatttat ttattctgcg aagtgatctt ccgtcacagg	1020
tatttattcg gactctagat aacttcgtat agcatacatt atacgaagtt atggatcatg	1080
gctgtgcagg tcgtaaatca ctgcataatt cgtgtcgtc aaggcgact cccgttctgg	1140
ataatgtttt ttgcgccgac atcataacgg ttctggcaaa tattctgaaa tgagctgttg	1200
acaattaatc atccggctcg tataatgtgt ggaattgtga gcggataaca atttcacaca	1260
ggaaacagac	1270

<210> 12

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer GalB1

<400> 12
actttggtcg tgaacatttc ccgtgggaaa

30

<210> 13

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer GalC11

<400> 13
agaaagataa gcaccgagga tcccgata

28

<210> 14

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer GlkB1

<400> 14
 aacaggagtg ccaaacagtg cgccga 26

<210> 15
 <211> 30
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer G1kC11

<400> 15
 ctattcggcg caaaatcaac gtgaccgcct 30

<210> 16
 <211> 99
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer edd1

<400> 16
 atgaatccac aattgttacg cgtaacaaat cgaatcattg aacgttcgcg cgagactcgc 60
 tctgcttatc tcgcccggat ttatcgataa gctggatcc 99

<210> 17
 <211> 98
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer edd2

<400> 17
 ttaaaaagtg atacaggttg cgccctgttc ggcaccggac agtttttcac gcaaggcgct 60
 gaataattca cgtcctgtcg gatgcatatg gcggccgc 98

<210> 18
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Primer edd3

<400> 18
taacatgatc ttgcgcagat tg 22

<210> 19

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer edd4

<400> 19
actgcacact cggtacgcag a 21

<210> 20

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> CN1, encoding mutated trc promoter driving glk expression

<400> 20
ctgacaatta atcatccggc tcgtataat 29

<210> 21

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> CN2, encoding parent trc promoter

<400> 21
ttgacaatta atcatccggc tcgtataat 29

<210> 22

<211> 25

<212> DNA
 <213> Artificial Sequence

 <220>
 <223> Primer gapA1
 <400> 22
 atgaccatct gaccatttgt gtcaa 25

 <210> 23
 <211> 25
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Primer gapA2
 <400> 23
 aatgcgctaa cagcgtaaag tcgtg 25

 <210> 24
 <211> 35
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Primer gapA3
 <400> 24
 gatacctact ttgatagtca catattccac cagct 35

 <210> 25
 <211> 35
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Primer gapA4
 <400> 25
 agctggtgga atatgtgact atcaaagtag gtatc 35

 <210> 26

<211> 35
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Primer gapA5
 <400> 26
 gatacctact ttgatagtca aatattccac cagct 35

 <210> 27
 <211> 35
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Primer gapA6
 <400> 27
 agctggtgga atatttgact atcaaagtag gtatc 35

 <210> 28
 <211> 42
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> short 1.5 GI promoter
 <400> 28
 gcccttgact atgccacatc ctgagcaaat aattcaacca ct 42

 <210> 29
 <211> 98
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Primer gapA-R1
 <400> 29
 agtcatatat tccaccagct atttgtagt gaataaaagt gggtgaatta tttgctcagg 60

atgtggcata gtcaagggca tatgaatatc ctccttag 98

<210> 30

<211> 80

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer gapA-R2

<400> 30

gctcacatta cgtgactgat tctaacaaaa cattaacacc aactggcaaa attttgtccg 60

tgtaggctgg agctgcttcg 80

<210> 31

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> short 1.20 GI promoter

<400> 31

gcccttgacg atgccacatc ctgagcaaat aattcaacca ct 42

<210> 32

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> short 1.6 GI promoter

<400> 32

gcccttgaca atgccacatc ctgagcaaat aattcaacca ct 42

<210> 33

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer gapA-R3

<400> 33
gtcgacaaac gctggtatac ctca 24

<210> 34

<211> 98

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer gapA-R4

<400> 34
agtcatatat tccaccagct atttgtagt gaataaaagt ggttgaatta tttgctcagg 60
atgtggcatc gtcaagggca tatgaatata ctccttag 98

<210> 35

<211> 98

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer gapA-R5

<400> 35
agtcatatat tccaccagct atttgtagt gaataaaagt ggttgaatta tttgctcagg 60
atgtggcatt gtcaagggca tatgaatata ctccttag 98

<210> 36

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer mgsA-1

<400> 36
gtacattatg gaactgacga ctcgcacttt acctgcgcgg ttaggctgg agctgcttcg 60

<210> 37

<211> 60
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Primer mgsA-2
 <400> 37
 cttcagacgg tccgcgagat aacgctgata atcggggatc catatgaata tcctccitag 60

 <210> 38
 <211> 22
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Primer mgsA-3
 <400> 38
 cttgaattgt tggatggcga tg 22

 <210> 39
 <211> 21
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Primer mgsA-4
 <400> 39
 cgtcacgtta ttggatgaga g 21

 <210> 40
 <211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Primer PppcF
 <400> 40
 cgatttttta acatttccat aagttacgct tatttaaagc gtcgtgaatt taatgacgta 60

aattcctgct atttattcgt gtgtaggctg gagctgcttc 100

<210> 41

<211> 100

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer Pppcr

<400> 41

tcgcattggc gcgaatatgc tcgggctttg cttttcgtca gtggttgaat tatttgctca 60

ggatgtggca ttgtcaaggg catatgaata tcctccttag 100

<210> 42

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer Seqppcr 7

<400> 42

gcggaatatt gttcgttcat attaccccag 30

<210> 43

<211> 90

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer 3G144

<400> 43

ccaggctgat tgaaatgccc ttctgtttca ggcataaagc cccaaagtca taaagtacac 60

tggcagcgcg gtgtaggctg gagctgcttc 90

<210> 44

<211> 93

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer 3G145

<400> 44

gcatggctac tcctcaacga cgttgtctgt tagtggttga attatttgct caggatgtgg 60

cattgtcaag ggcattccgg ggatccgtcg acc 93

<210> 45

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer YCIKUp

<400> 45

gataataaccg cgttcatcct gggcc 25

<210> 46

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer YCIKDn

<400> 46

gcgagttcac ttcattgggcg tccat 25

<210> 47

<211> 98

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer yqhCFRTF

<400> 47

ttaattcccc tgcattcgccc gcattcttgc cgcattcttc cccggcgta caccgaagta 60

acgtttaaac tcacggctgt gtaggctgga gctgcttc 98

<210> 48

<211> 100
<212> DNA
<213> Artificial Sequence

<220>

<223> Primer CyqhD1.6

<400> 48
ctcccttgct gggccaatat gagggcagag aacgatctgc ctggttgaat tatttgctca 60
ggatgtggca ttgtcaaggg catatgaata tcctccttag 100

<210> 49
<211> 46
<212> DNA
<213> Artificial Sequence

<220>

<223> Primer yqhBF

<400> 49
atcgcccgc ttccttgccgc atcttcccc ggcgtcacac cgaagt 46

<210> 50
<211> 100
<212> DNA
<213> Artificial Sequence

<220>

<223> Primer pta 1

<400> 50
atgtcgagta agttagtact ggttctgaac tgcggtagtt cttcactgaa atttgccatc 60
atcgatgcag taaatgggtga tgtgtaggct ggagctgctt 100

<210> 51
<211> 100
<212> DNA
<213> Artificial Sequence

<220>

<223> Primer ack-pta 2

<400> 51
ttactgctgc tgtgcagact gaatcgagc cagcgcgatg gtgtagacga tatcgtaac 60
cagtgcgcca cgggacaggt catatgaata tcctccttag 100

<210> 52

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer ack-U

<400> 52
attcattgag tcgtcaaatt 20

<210> 53

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer ack-D

<400> 53
attgcggaca tagcgcaaatt 20

<210> 54

<211> 98

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer ptSHFRT1

<400> 54
atgttccagc aagaagttac cattaccgct ccgaacggtc tgcacacccg ccctgctgcc 60
cagtttgtaa aagaagctgt gtaggctgga gctgcttc 98

<210> 55

<211> 97

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer crrFRT11

<400> 55
ttactttcttg atgcggataa ccgggggttc acccacggtt acgctaccgg acagtttgat 60
cagttctttg atttcgtcat atgaatatcc tccttag 97

<210> 56

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer crrR

<400> 56
cctgttttgt gctcagctca tcagtggctt gctgaa 36

<210> 57

<211> 100

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer DalDAF

<400> 57
atgtcagtac ccgttcaaca tcctatgtat atcgatggac agtttgttac ctggcgtgga 60
gacgcatgga ttgatgtggt tgtgtaggct ggagctgctt 100

<210> 58

<211> 100

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer DalDAR

<400> 58
ttaagactgt aaataaacca cctgggtctg cagatattca tgcaagccat gtttaccatc 60

tgcgccgcca ataccggatt catatgaata tcctccttag	100
<210> 59	
<211> 20	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Primer aldAF300	
<400> 59	20
ttatcgttca cgttgatttt	
<210> 60	
<211> 20	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Primer aldAR300	
<400> 60	20
gaaaaaagtg actgccgaag	
<210> 61	
<211> 100	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Primer DalDBF	
<400> 61	60
cgtctaccct tggtatacct cacaccgcaa ggagacgata atgaccaata atcccccttc	
agcacagatt aagcccggcg gtgtaggctg gagctgcttc	100
<210> 62	
<211> 100	
<212> DNA	
<213> Artificial Sequence	

<220>

<223> Primer DalDBR

<400> 62
gcatcaggca atgaataccc aatgcgacca gcttcttata tcagaacagc cccaacgggt 60
tatccgagta gctcaccagc catatgaata tcctccttag 100

<210> 63

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer alDBF

<400> 63
atgaccaata atcccccttc ag 22

<210> 64

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer alDBR

<400> 64
gcttcttata tcagaacagc c 21

<210> 65

<211> 13669

<212> DNA

<213> Artificial sequence

<220>

<223> Plasmid pSYCO101

<400> 65
tagtaaagcc ctcgctagat tttaatgcgg atgttgcat tacttcgcca actattgcga 60
taacaagaaa aagccagcct ttcattgat atctcccaat ttgtgtaggg cttattatgc 120
acgcttaaaa ataataaaag cagacttgac ctgatagttt ggctgtgagc aattatgtgc 180
ttagtgcac taacgcttga gttaagccgc gccgcgaagc ggcgtcggct tgaacgaatt 240

gttagacatt atttgccgac taccttgggtg atctcgccctt tcacgtagtg gacaaattct	300
tccaactgat ctgcgcgga ggccaagcga tcttcttctt gtccaagata agcctgtcta	360
gcttcaagta tgacgggctg atactgggcc ggcaggcgct ccattgcca gtcggcagcg	420
acatccttcg gcgcgatttt gccggttact gcgctgtacc aaatgcggga caacgtaagc	480
actacatttc gctcatcgcc agcccagtcg ggcggcgagt tccatagcgt taaggtttca	540
tttagcgcct caaatagatc ctgttcagga accggatcaa agagttcctc cgccgctgga	600
cctaccaagg caacgctatg ttctcttgct tttgtcagca agatagccag atcaatgtcg	660
atcgtggctg gctcgaagat acctgcaaga atgtcattgc gctgccattc tccaaattgc	720
agttcgcgct tagctggata acgccacgga atgatgtcgt cgtgcacaac aatgggtgact	780
tctacagcgc ggagaatctc gctctctcca ggggaagccg aagtttcaa aaggctggtg	840
atcaaagctc gccgcgttgt ttcacgaagc cttacggtca ccgtaaccag caaatcaata	900
tcactgtgtg gcttcaggcc gccatccact gcggagccgt acaaatgtac ggccagcaac	960
gtcggttcga gatggcgctc gatgacgcca actacctctg atagttgagt cgatacttcg	1020
gcgatcaccg cttccctcat gatgtttaac tttgttttag ggcgactgcc ctgctgcgta	1080
acatcgttgc tgctccataa catcaaacat cgaccacgga cgtaacgcgc ttgctgcttg	1140
gatgcccag gcatagactg taccctaaaa aaacagtcac aacaagccat gaaaaccgcc	1200
actgcgccgt taccaccgct gcgttcggtc aagggtcttg accagttgcg tgagcgcata	1260
cgctacttgc attacagctt acgaaccgaa caggcttatg tccactgggt tcgtgccttc	1320
atccgtttcc acggtgtgcg taccctggca accttgggca gcagcgaagt cgaggcattt	1380
ctgtcctggc tggcgaacga gcgcaagggt tcggtctcca cgcacgtca ggcattggcg	1440
gccttgctgt tcttctacgg caagggtgctg tgcacggatc tgccctggct tcaggagatc	1500
ggaagacctc ggccgtcgcg gcgcttgccg gtggtgctga ccccgatga agtggttcgc	1560
atcctcgggt ttctggaagg cgagcatcgt ttgttcgccc agcttctgta tggaacgggc	1620
atgcggatca gtgaggggtt gcaactgcgg gtcaaggatc tggatttcga tcacggcacg	1680
atcatcgtgc gggagggcaa gggctccaag gatcgggcct tgatgttacc cgagagcttg	1740
gcaccagcc tgcgcgagca ggggaattaa ttcccacggg ttttgctgcc cgcaaaggg	1800
ctgttctggt gttgctagtt tggtatcaga atcgcagatc cggcttcagc cggtttgccg	1860
gctgaaagcg ctatttcttc cagaattgcc atgatttttt cccacggga ggcgtcactg	1920
gctcccgtgt tgcggcagc tttgattcga taagcagcat cgctgtttc aggctgtcta	1980
tgtgtgactg ttgagctgta acaagttgtc tcagggtgttc aatttcattg tctagttgct	2040
ttgttttact ggtttcacct gttctattag gtgttacatg ctgttcattt gttacattgt	2100
cgatctgttc atggtgaaca gctttgaatg caccaaaaac tcgtaaaagc tctgatgtat	2160
ctatcttttt tacaccgttt tcatctgtgc atatggacag ttttcccttt gatatgtaac	2220
ggtgaacagt tgttctactt ttgtttgtta gtcttgatgc ttactgata gatacaagag	2280

ccataagaac ctcagatcct tccgtattta gccagtatgt tctctagtgt ggttcgttgt	2340
ttttgcgtga gccatgagaa cgaaccattg agatcatact tactttgcat gtcactcaaa	2400
aattttgcct caaaactggg gagctgaatt tttgcagtta aagcatcgtg tagtgttttt	2460
cttagtccgt tatgtaggta ggaatctgat gtaatggttg ttggtatttt gtcaccattc	2520
atTTTTatct ggttgttctc aagttcgggtt acgagatcca tttgtctatc tagttcaact	2580
tggaaaatca acgtatcagt cgggCGgcct cgcttatcaa ccaccaattt catattgctg	2640
taagtgttta aatctttact tattggtttc aaaacccatt ggttaagcct tttaaactca	2700
tggtagttaa tttcaagcat taacatgaac tttaaattcat caaggctaata ctctatattt	2760
gccttgtagg ttttcttttg tggttagttct ttttaataacc actcataaat cctcatagag	2820
tatttgTTTT caaaagactt aacatgttcc agattatatt ttatgaattt ttttaactgg	2880
aaaagataag gcaatatctc ttcactaaaa actaattcta atttttcgct tgagaacttg	2940
gcatagtttg tccactggaa aatctcaaag cctttaacca aaggattcct gatttccaca	3000
gttctcgtca tcagctctct gggttgcttta gctaatacac cataagcatt ttccctactg	3060
atgttcatca tctgagcgta ttggttataa gtgaacgata ccgtccgttc tttccttgta	3120
gggttttcaa tcgtgggggt gagtagtgcc acacagcata aaattagctt ggtttcatgc	3180
tccgttaagt catagcgact aatcgctagt tcatttgctt tgaaaacaac taattcagac	3240
atacatctca attggtctag gtgattttaa tcactatacc aattgagatg ggctagtcaa	3300
tgataattac tagtcctttt cctttgagtt gtgggtatct gtaaattctg ctagaccttt	3360
gctggaaaac ttgtaaattc tgctagacct tctgtaaatt ccgctagacc tttgtgtgtt	3420
ttttttgttt atattcaagt gggtataatt tatagaataa agaaagaata aaaaaagata	3480
aaaagaatag atcccagccc tgtgtataac tcactacttt agtcagttcc gcagtattac	3540
aaaaggatgt cgcaaacgct gtttgctcct ctacaaaaca gaccttaaaa ccctaaaggc	3600
ttaagtagca ccctcgcaag ctCGggcaaa tcgctgaata ttccttttgt ctccgaccat	3660
caggcacctg agtcgctgtc tttttcgtga cattcagttc gctgcgctca cggctctggc	3720
agtgaatggg ggtaaattgg actacaggcg ctttttatgg attcatgcaa ggaaactacc	3780
cataatacaa gaaaagcccc tcacgggctt ctCaggcggt tttatggcggt gtctgctatg	3840
tggtgctatc tgactttttg ctgttcagca gttcctgccc tctgattttc cagtctgacc	3900
acttcggatt atcccgtgac aggtcattca gactggctaa tgcacccagt aaggcagcgg	3960
tatcatcaac aggcttacct gtcttactgt cgggaattca tttaaatagt caaaagcctc	4020
cgaccggagg cttttgactg ctaggcgatc tgtgctgttt gccacggtat gcagcaccag	4080
cgcgagatta tgggctcgca cgctcgactg tcggacgggg gactggaac gagaagttag	4140
gcgagccgtc acgcccttga caatgccaca tcctgagcaa ataattcaac cactaaacaa	4200
atcaaccggt tttcccggag gtaaccaagc ttgcggggaga gaatgatgaa caagagccaa	4260
caagttcaga caatcacctt ggccgccgcc cagcaaatgg cggcggcggt ggaaaaaaaa	4320
gccactgaga tcaacgtggc ggtgggtgtt tccgtagtgt accgcggagg caacacgctg	4380

cttatccagc	ggatggacga	ggccttcgtc	tccagctgcg	atatttcctt	gaataaagcc	4440
tggagcgcct	gcagcctgaa	gcaaggtacc	catgaaatta	cgtcagcggc	ccagccagga	4500
caatctctgt	acggtctgca	gctaaccaac	caacagcgaa	ttattatctt	tggcggcggc	4560
ctgccagtta	tttttaata	gcaggttaatt	ggcgccgctg	gcgttagcgg	cggtagcggtc	4620
gagcaggatc	aattatttagc	ccagtgcgcc	ctggattggt	tttccgcatt	ataacctgaa	4680
gcgagaaggt	atattatgag	ctatcgtatg	ttccgccagg	cattctgagt	gttaacgagg	4740
ggaccgtcat	gtcgttttca	ccgccaggcg	tacgcctgtt	ttacgatccg	cgcgggcacc	4800
atgccggcgc	catcaatgag	ctgtgctggg	ggctggagga	gcaggggggc	ccctgccaga	4860
ccataacctt	tgacggaggc	ggtgacgccg	ctgcgctggg	cgccctggcg	gccagaagct	4920
cgccccctgc	ggtgggtatc	gggctcagcg	cgctccggcg	gatagccctc	actcatgccc	4980
agctgccggc	ggacgcgccg	ctggctaccg	gacacgtcac	cgatagcgac	gatcaactgc	5040
gtacgctcgg	cgccaacgcc	gggcagctgg	ttaaagtcct	gccgttaagt	gagagaaact	5100
gaatgtatcg	tatctatacc	cgcaccgggg	ataaaggcac	caccgccctg	tacggcggca	5160
gccgcatcga	gaaagaccat	attcgcgtcg	aggcctacgg	caccgtcgat	gaactgatat	5220
cccagctggg	cgtctgctac	gccacgaccc	gcgacgccgg	gctgcgggaa	agcctgcacc	5280
atattcagca	gacgctgttc	gtgctggggg	ctgaactggc	cagcgatgcg	cggggcctga	5340
cccgcctgag	ccagacgata	ggcgaagagg	agatcaccgc	cctggagcgg	cttatcgacc	5400
gcaatatggc	cgagagcggc	ccgttaaaac	agttcgtgat	cccggggagg	aatctcgcct	5460
ctgcccagct	gcacgtggcg	cgcacccagt	cccgtcggct	cgaacgcctg	ctgacggcca	5520
tggaccgcgc	gcatccgctg	cgcgacgcgc	tcaaacgcta	cagcaatcgc	ctgtcggatg	5580
ccctgtttct	catggcgcg	atcgaagaga	ctaggcctga	tgcttgcgct	tgaactggcc	5640
tagcaaacac	agaaaaaagc	ccgcacctga	cagtgcgggc	tttttttttc	ctaggcgatc	5700
tgtgctgttt	gccacggtat	gcagcaccag	cgcgagatta	tgggctcgca	cgctcgactg	5760
tcggacgggg	gacttggaac	gagaagtcag	gcgagccgtc	acgcccttga	caatgccaca	5820
tcctgagcaa	ataattcaac	cactaaacaa	atcaaccgcg	tttcccggag	gtaaccaagc	5880
ttcacctttt	gagccgatga	acaatgaaaa	gatcaaaacg	atttgcagta	ctggcccagc	5940
gccccgtcaa	tcaggacggg	ctgattggcg	agtggcctga	agagggggctg	atcgccatgg	6000
acagcccctt	tgaccgggtc	tcttcagtaa	aagtggacaa	cggtctgata	gtcgaactgg	6060
acggcaaacg	ccgggaccag	tttgacatga	tcgaccgatt	tatcgccgat	tacgcgatca	6120
acgttgagcg	cacagagcag	gcaatgcgcc	tggaggcggt	ggaaatagcc	cgtatgctgg	6180
tggatattca	cgtcagccgg	gaggagatca	ttgccatcac	taccgccatc	acgccggcca	6240
aagcggtcga	ggtgatggcg	cagatgaacg	tggtaggat	gatgatggcg	ctgcagaaga	6300
tgcgtgcccc	ccggaccccc	tccaaccagt	gccacgtcac	caatctcaaa	gataatccgg	6360
tgcagattgc	cgctgacgcc	gccgaggccg	ggatccgcgg	cttctcagaa	caggagacca	6420

cggtcgggtat	cgcgcgctac	gcgccgttta	acgccctggc	gctgttggtc	ggttcgcagt	6480
gcggccgccc	cggcgtgttg	acgcagtgtc	cggtggaaga	ggccaccgag	ctggagctgg	6540
gcatgcgtgg	cttaaccagc	tacgccgaga	cggtgtcggg	ctacggcacc	gaagcgggtat	6600
ttaccgacgg	cgatgatacg	ccgtgggtcaa	aggcgttcct	cgcctcggcc	tacgcctccc	6660
gcggggttgaa	aatgcgctac	acctccggca	ccggatccga	agcgtgatg	ggctattcgg	6720
agagcaagtc	gatgctctac	ctcgaatcgc	gctgcatctt	cattactaaa	ggcgcggggg	6780
ttcagggact	gcaaaacggc	gcggtagact	gtatcggcat	gaccggcgct	gtgccgtcgg	6840
gcattcgggc	gggtgctggc	gaaaacctga	tcgcctctat	gctcgacctc	gaagtggcgt	6900
ccgccaacga	ccagactttc	tcccactcgg	atattcgccg	caccgcgcgc	accctgatgc	6960
agatgctgcc	gggcaccgac	tttattttct	ccggctacag	cgcggtgccg	aactacgaca	7020
acatgttcgc	cggctcgaac	ttcgatgcgg	aagattttga	tgattacaac	atcctgcagc	7080
gtgacctgat	ggttgacggc	ggcctgcgtc	cggtgaccga	ggcggaaacc	attgccattc	7140
gccagaaaagc	ggcgcggggc	atccaggcgg	ttttccgcga	gctggggctg	ccgccaatcg	7200
ccgacgagga	ggtggaggcc	gccacctacg	cgcacggcag	caacgagatg	ccgccgcgta	7260
acgtggtgga	ggatctgagt	gcggtggaag	agatgatgaa	gcgcaacatc	accggcctcg	7320
atattgtcgg	cgcgctgagc	cgcagcgggt	ttgaggatat	cgccagcaat	attctcaata	7380
tgctgcgcca	gcgggtcacc	ggcgattacc	tgcagacctc	ggccattctc	gatcggcagt	7440
tcgagggtgt	gagtgcggtc	aacgacatca	atgactatca	ggggccgggc	accggctatc	7500
gcatctctgc	cgaacgctgg	gcggagatca	aaaatattcc	gggcgtgggt	cagcccagaca	7560
ccattgaata	aggcgggtatt	cctgtgcaac	agacaacca	aattcagccc	tcttttacc	7620
tgaaaacccg	cgagggcggg	gtagcttctg	ccgatgaacg	cgccgatgaa	gtggtgatcg	7680
gcgtcggccc	tgccttcgat	aaacaccagc	atcacactct	gatcgatatg	ccccatggcg	7740
cgatcctcaa	agagctgatt	gccgggggtg	aagaagaggg	gcttcacgcc	cgggtggtgc	7800
gcattctgcg	cacgtccgac	gtctccttta	tggcctggga	tgcggccaac	ctgagcggct	7860
cggggatcgg	catcgggtatc	cagtcgaagg	ggaccacggt	catccatcag	cgcgatctgc	7920
tgccgctcag	caacctggag	ctgttctccc	aggcgccgct	gctgacgctg	gagacctacc	7980
ggcagattgg	caaaaacgct	gcgcgctatg	cgcgcaaaga	gtcaccttcg	ccggtgccgg	8040
tgggtgaacga	tcagatgggtg	cggccgaaat	ttatggccaa	agccgcgcta	tttcatatca	8100
aagagaccaa	acatgtgggtg	caggacgccg	agcccgtcac	cctgcacatc	gacttagtaa	8160
gggagtgacc	atgagcgaga	aaacctatgc	cgtgcaggat	tatccgttag	ccaccgcgtg	8220
cccggagcat	atcctgacgc	ctaccggcaa	accattgacc	gatattaccc	tcgagaaggt	8280
gctctctggc	gaggtggggc	cgcaggatgt	gcggatctcc	cgccagaccc	ttgagtacca	8340
ggcgcagatt	gccgagcaga	tgcagcgcca	tgcggtggcg	cgcaatttcc	gccgcgcggc	8400
ggagcttata	gccattcctg	acgagcgcat	tctggctatc	tataacgcgc	tgcgcccgtt	8460
ccgctcctcg	caggcgagc	tgctggcgat	cgccgacgag	ctggagcaca	cctggcatgc	8520

gacagtgaat gccgcctttg tccgggagtc ggcggaagtg tadcagcagc ggcataagct	8580
gcgtaaagga agctaagcgg aggtcagcat gccgttaata gccgggattg atatcggcaa	8640
cgccaccacc gaggtggcgc tggcgtccga ctaccgcag gcgagggcgt ttgttgccag	8700
cgggatcgtc gcgacgacgg gcatgaaagg gacgcgggac aatatcgccg ggaccctcgc	8760
cgcgctggag caggccctgg cgaaaacacc gtggtcgatg agcgatgtct ctcgcatcta	8820
tcttaacgaa gccgcgccgg tgattggcga tgtggcgatg gagaccatca ccgagaccat	8880
tatcaccgaa tcgaccatga tcggtcataa cccgcagacg ccgggcgggg tgggcgttgg	8940
cgtggggacg actatcgccc tcgggcggct ggcgacgctg ccggcggcgc agtatgccga	9000
ggggtggatc gtactgattg acgacgccgt cgatttcctt gacgccgtgt ggtggctcaa	9060
tgaggcgctc gaccggggga tcaacgtggt ggcggcgatc ctcaaaaagg acgacggcgt	9120
gctggtgaac aaccgcctgc gtaaaaccc t gccggtggtg gatgaagtga cgctgctgga	9180
gcagggtcccc gagggggtaa tggcggcggg ggaagtggcc gcgccgggcc aggtggtgcg	9240
gatcctgtcg aatccctacg ggatcgccac ctcttcggg ctaagcccgg aagagacca	9300
ggccatcgtc cccatcgccc gcgccctgat tggcaaccgt tccgcgggtg tgctcaagac	9360
cccgcagggg gatgtgcagt cgcgggtgat cccggcgggc aacctctaca ttagcggcga	9420
aaagcgccgc ggagaggccg atgtcgccga gggcgcgga gccatcatgc aggcgatgag	9480
cgcctgcgct ccggtacgcg acatccgcgg cgaaccgggc acccacgccg gcggcatgct	9540
tgagcgggtg cgcaaggtaa tggcgtccct gaccggccat gagatgagcg cgatatacat	9600
ccaggatctg ctggcgggtg atacgtttat tccgcgcaag gtgcagggcg ggatggccgg	9660
cgagtgcgcc atggagaatg ccgtcgggat ggcggcgatg gtgaaagcgg atcgtctgca	9720
aatgcagggt atcgcccgcg aactgagcgc ccgactgcag accgaggtgg tgggtggcg	9780
cgtggaggcc aacatggcca tcgccggggc gttaaccact cccggctgtg cggcgccgct	9840
ggcgatcctc gacctggcg ccggctcgac ggatgcggcg atcgtcaacg cggaggggca	9900
gataacggcg gtccatctcg ccggggcggg gaatatggtc agcctgttga ttaaaaccga	9960
gctgggcctc gaggatcttt cgctggcgga agcgataaaa aaataccgc tggccaaagt	10020
ggaaagcctg ttcagtattc gtcacgagaa tggcgcgggt gagttctttc gggaagccct	10080
cagcccggcg gtgttcgcca aagtggtgta catcaaggag ggcgaactgg tgccgatcga	10140
taacgccagc ccgctggaaa aaattcgtct cgtgcgccgg caggcgaag agaaagtgtt	10200
tgtcaccaac tgctgcgcg cgctgcgcca ggtctcacc gccggttcca ttcgcgatat	10260
cgcctttgtg gtgctgggtg gcggctcatc gctggacttt gagatcccgc agcttatcac	10320
ggaagccttg tcgcactatg gcgtggtcgc cgggcagggc aatattcggg gaacagaagg	10380
gccgcgcaat gcggtcgcca ccgggctgct actggccggt caggcgaatt aaacgggcgc	10440
tcgcgccagc ctctaggtac aaataaaaaa ggcacgtcag atgacgtgcc ttttttcttg	10500
tctagagtac tggcgaaagg gggatgtgct gcaaggcgat taagttgggt aacgccaggg	10560

ttttcccagt	cacgacgttg	taaaacgacg	gccagtgaat	tcgagctcgg	tacccggggc	10620
ggccgcgcta	gcgcccgatc	cagctggagt	ttgtagaaac	gcaaaaaggc	catccgtcag	10680
gatggccttc	tgcttaattt	gatgcctggc	agtttatggc	gggcgtcctg	cccgccaccc	10740
tccggggcgt	tgcttcgcaa	cgttcaaadc	cgctcccggc	ggatttgtcc	tactcaggag	10800
agcgttcacc	gacaaacaac	agataaaacg	aaaggcccag	tctttcgact	gagcctttcg	10860
ttttatttga	tgcttggcag	ttccctactc	tcgcatgggg	agaccccaca	ctaccatcgg	10920
cgctacggcg	tttcacttct	gagttcggca	tggggtcagg	tgggaccacc	gcgctactgc	10980
cgccaggcaa	attctgtttt	atcagaccgc	ttctgcgttc	tgatttaatc	tgtatcaggc	11040
tgaaaatctt	ctctcatccg	ccaaaacagc	caagcttgca	tgctgcagc	ccgggttacc	11100
atttcaacag	atcgctccta	gcatataagt	agtcgtcaaa	aatgaattca	acttcgtctg	11160
tttcggcatt	gtagccgcca	actctgatgg	attcgtgggt	tttgacaatg	atgtcacagc	11220
ctttttcctt	taggaagtcc	aagtcgaaag	tagtggcaat	accaatgatc	ttacaaccgg	11280
cggctttttc	ggcggcaata	cctgctggag	cgctttcaaa	tactactacc	ttagatttgg	11340
aagggtcttg	ctcattgatc	ggatataccta	agccattcct	gcccttcaga	tatggttctg	11400
gatgaggctt	accctgtttg	acatcattag	cggtaatgaa	gtactttggg	ctcctgattc	11460
ccagatgctc	gaaccatttt	tgtgccatat	cacgggtacc	ggaagttgcc	acagcccatt	11520
tctcttttgg	tagagcggtc	aaagcggttg	acagcttaac	tgacactggg	acttcaatgg	11580
atttttcacc	gtacttgacc	ggaatttcag	cttctaattt	gttaacatac	tcttcattgg	11640
caaagtctgg	agcgaactta	gcaatggcat	caaacgttct	ccaaccatgc	gagacttgga	11700
taacgtgttc	agcatcgaaa	taagggttgt	ccttaccgaa	atccctccag	aatgcagcaa	11760
tggctgggtg	agagatgata	atgggtaccgt	cgacgtcgaa	caaagcggcg	ttacttttca	11820
aagatagagg	tttagtagtc	aatcccataa	ttctagtctg	tttcttggtg	ccaataaatc	11880
taatcttcat	gtagatctaa	ttcttcaatc	atgtccggca	ggttcttcat	tgggtagttg	11940
ttgtaaacga	tttgggtatac	ggcttcaaat	aatgggaagt	cttcgacaga	gccacatggt	12000
tccaaccatt	cgtgaacttc	tttgcaggta	attaaacctt	gagcggattg	gccattcaac	12060
aactcctttt	cacattccca	ggcgtcctta	ccagaagtag	ccattagcct	agcaaccttg	12120
acgtttctac	caccagcgca	ggtggtgatc	aaatcagcaa	caccagcaga	ctcttggtag	12180
tatgtttcct	ctctagattc	tgggaaaaac	atttgaccga	atctgatgat	ctcaccctaa	12240
ccgactcttt	ggatggcagc	agaagcggtg	ttaccccagc	ctagaccttc	gacgaaacca	12300
caacctaaagg	caacaacggt	cttcaaagca	ccacagatgg	agataaccagc	aacatcttcg	12360
atgacactaa	cgtggaagta	aggtctgtgg	aacaaggcct	ttagaacctt	atggtcgacg	12420
tccttgccct	cgcctctgaa	atcctttgga	atgtggtaag	caactgttgt	ttcagaccag	12480
tgttcttgag	cgacttcggt	ggcaatgtta	gcaccagata	gagcaccaca	ttgaataacct	12540
agttcctcag	tgatgtaaga	ggatagcaat	tggacacctt	tagcaccaac	ttcaaaaccc	12600
tttagacagg	agatagctct	gacgtgtgaa	tcaacatgac	ctttcaattg	gctacagata	12660

cggggcaaaa attgatgtgg aatggtgaaa acgatgatgt cgacatcctt gactgaatca	12720
atcaagtctg gattagcaac caaattgtcg ggtagagtga tgccaggcaa gtatttcacg	12780
ttttgatgtc tagtatttat gatttcagtc aatttttcac cattgatctc ttcttcgaac	12840
acccacattt gtactatttg agcgaaaact tctgggtatc cttacaatt ttcggcaacc	12900
accttggaac tagtagtacc ccagttacca gatccaatca cagtaacctt gaaaggcttt	12960
tcggcagcct tcaaagaaac agaagaggaa cttctctttc taccagcatt caagtggccg	13020
gaagttaagt ttaatctatc agcagcagca gccatggaat tgtcctcctt actagtcatg	13080
gtctgtttcc tgtgtgaaat tgttatccgc tcacaattcc acacattata cgagccggat	13140
gattaattgt caacagctca tttcagaata ttgcccagaa ccgttatgat gtcggcgcaa	13200
aaaacattat ccagaacggg agtgcgctt gagcgacacg aattatgcag tgatttacga	13260
cctgcacagc cataccacag cttccgatgg ctgcctgacg ccagaagcat tggcgcacgc	13320
tagccagtac atttaaattg taccctctag tcaaggcctt aagtgagtcg tattacggac	13380
tggccgtcgt tttacaacgt cgtgactggg aaaaccctgg cgttacccaa cttaatcgcc	13440
ttgcagcaca tccccctttc gccagctggc gtaatagcga agaggcccgc accgatcgcc	13500
cttccaaca gttgcgcagc ctgaatggcg aatggcgctt gatgcggtat tttctcctta	13560
cgcattctgt cggtatttca caccgcatat ggtgcactct cagtacaatc tgctctgatg	13620
ccgcatagtt aagccagccc cgacacccgc caacacccgc tgacgagct	13669

<210> 66

<211> 13543

<212> DNA

<213> artificial sequence

<220>

<223> Plasmid pSYCO103

<400> 66	
tagtaaagcc ctcgctagat tttaatgcgg atgttgcgat tacttcgcca actattgcga	60
taacaagaaa aagccagcct ttcattgatat atctcccaat ttgtgtaggg cttattatgc	120
acgcttaaaa ataataaaag cagacttgac ctgatagttt ggctgtgagc aattatgtgc	180
ttagtgcatc taacgcttga gttaagccgc gccgcgaagc ggcgtcggct tgaacgaatt	240
gttagacatt atttgccgac taccttggtg atctcgcctt tcacgtagtg gacaaattct	300
tccaactgat ctgcgcgcga ggccaagcga tcttcttctt gtccaagata agcctgtcta	360
gcttcaagta tgacgggctg atactgggccc ggcaggcgct ccattgcca gtcggcagcg	420
acatccttcg gcgcgatttt gccggttact gcgctgtacc aaatgcggga caacgtaagc	480
actacatttc gctcatcgcc agcccagtcg ggcggcgagt tccatagcgt taaggtttca	540

tttagcgcct caaatagatc ctgttcagga accggatcaa agagttcctc cgccgctgga	600
cctaccaagg caacgctatg ttctcttgct tttgtcagca agatagccag atcaatgtcg	660
atcgtggctg gctcgaagat acctgcaaga atgtcattgc gctgccattc tccaaattgc	720
agttcgcgct tagctggata acgccacgga atgatgtcgt cgtgcacaac aatggtgact	780
tctacagcgc ggagaatctc gctctctcca ggggaagccg aagtttccaa aaggtcgttg	840
atcaaagctc gccgcgttgt ttcatcaagc cttacgggtca ccgtaaccag caaatcaata	900
tcactgtgtg gcttcaggcc gccatccact gcggagccgt acaaattgtac ggccagcaac	960
gtcggttcga gatggcgctc gatgacgcca actacctctg atagttgagt cgatacttcg	1020
gcgatcaccg ctccctcat gatgtttaac tttgttttag ggcgactgcc ctgctgcgta	1080
acatcgttgc tgctccataa catcaaacat cgaccacgga cgtaacgcgc ttgctgcttg	1140
gatgcccag gcatagactg taccctcaaaa aaacagtcac aacaagccat gaaaaccgcc	1200
actgcgccgt taccaccgct gcgttcggtc aaggttcttg accagttgcg tgagcgcata	1260
cgctacttgc attacagctt acgaaccgaa caggcttatg tccactgggt tcgtgccttc	1320
atccgtttcc acggtgtgctg tcaccggga accttgggca gcagcgaagt cgaggcattt	1380
ctgtcctggc tggcgaacga gcgcaagggt tcgggtctcca cgcacgtca ggcattggcg	1440
gccttgctgt tcttctacgg caagggtgctg tgcacggatc tgccctggct tcaggagatc	1500
ggaagacctc ggccgtcgcg gcgcttgccg gtggtgctga ccccgatga agtggttcgc	1560
atcctcggtt ttctggaagg cgagcatcgt ttgttcgccc agcttctgta tggaacgggc	1620
atgcggatca gtgagggttt gcaactgcgg gtcaaggatc tggatttcga tcacggcacg	1680
atcatcgtgc gggagggcaa gggctccaag gatcgggcct tgatgttacc cgagagcttg	1740
gcaccagcc tgcgcgagca ggggaattaa ttcccacggg ttttgctgcc cgcaaacggg	1800
ctgttctggt gttgctagtt tgttatcaga atcgcagatc cggcttcagc cggttgccg	1860
gctgaaagcg ctatttcttc cagaattgcc atgatttttt cccacggga ggcgtcactg	1920
gctcccgtgt tgtcggcagc ttgtattcga taagcagcat cgctgtttc aggtgtctta	1980
tgtgtgactg ttgagctgta acaagttgtc tcagggtgtt aatttcatgt tctagttgct	2040
ttgttttact ggtttcacct gttctattag gtgttacatg ctgttcatct gttacattgt	2100
cgatctgttc atggtgaaca gctttgaatg caccaaaaac tcgtaaaagc tctgatgtat	2160
ctatcttttt tacaccgttt tcatctgtgc atatggacag ttttcccttt gatatgtaac	2220
ggtgaacagt tgttctactt ttgtttgtta gtcttgatgc ttactgata gatacaagag	2280
ccataagaac ctcatatcct tccgtattta gccagtatgt tctctagtgt ggttcgttgt	2340
ttttgcgtga gccatgagaa cgaaccattg agatcactact tactttgcat gtcactcaaa	2400
aattttgcct caaaactggt gagctgaatt tttgcagtta aagcatcgtg tagtgttttt	2460
cttagtccgt tatgtaggta ggaatctgat gtaatggttg ttggtatttt gtcaccattc	2520
atttttatct ggttgttctc aagttcgggt acgagatcca tttgtctatc tagttcaact	2580
tggaaaatca acgtatcagt cgggcggcct cgcttatcaa ccaccaattt catattgctg	2640

taagtgttta	aatctttact	tattggtttc	aaaaccatt	ggtaagcct	tttaaactca	2700
tggtagttaa	tttcaagcat	taacatgaac	ttaaattcat	caaggcta	ctctatattt	2760
gccttgtag	ttttcttttg	tgtagttct	tttaataacc	actcataaat	cctcatagag	2820
tatttgtttt	caaaagactt	aacatgttcc	agattatatt	ttatgaattt	ttttaactgg	2880
aaaagataag	gcaatatctc	ttcactaaaa	actaattcta	atttttcgct	tgagaacttg	2940
gcatagtttg	tccactggaa	aatctcaaag	cctttaacca	aaggattcct	gatttccaca	3000
gttctcgtca	tcagctctct	ggttgcttta	gctaatacac	cataagcatt	ttccctactg	3060
atgttcatca	tctgagcgta	ttgggtataa	gtgaacgata	ccgtccgttc	tttccttgta	3120
gggttttcaa	tcgtgggggt	gagtagtgcc	acacagcata	aaattagctt	ggtttcatgc	3180
tccgttaagt	catagcgact	aatcgctagt	tcatttgctt	tgaaaacaac	taattcagac	3240
atacatctca	attggcttag	gtgattttaa	tcactatacc	aattgagatg	ggctagtcaa	3300
tgataattac	tagtcctttt	cctttgagtt	gtgggtatct	gtaaattctg	ctagaccttt	3360
gctggaaaac	ttgtaaattc	tgctagacct	tctgtaaatt	ccgctagacc	tttggtgtgt	3420
ttttttgttt	atattcaagt	ggttataatt	tatagaataa	agaaagaata	aaaaagata	3480
aaaagaatag	atcccagccc	tgtgtataac	tcactacttt	agtcagttcc	gcagtattac	3540
aaaaggatgt	cgcaaacgct	gtttgctcct	ctacaaaaca	gaccttaaaa	ccctaaaggc	3600
ttaagtagca	ccctcgcaag	ctcgggcaaa	tcgctgaata	ttccttttgt	ctccgaccat	3660
caggcacctg	agtcgctgtc	tttttcgtga	cattcagttc	gctgcgctca	cggctctggc	3720
agtgaatggg	ggtaaattgg	actacaggcg	ccttttatgg	attcatgcaa	ggaaactacc	3780
cataatacaa	gaaaagcccc	tcacgggctt	ctcagggcgt	tttatggcgg	gtctgctatg	3840
tggtgctatc	tgactttttg	ctgttcagca	gttcctgccc	tctgattttc	cagtctgacc	3900
acttcggatt	atcccgtgac	aggtcattca	gactggctaa	tgcacccagt	aaggcagcgg	3960
tatcatcaac	aggcttacct	gtcttactgt	cgggaattca	tttaaatagt	caaaagcctc	4020
cgaccggagg	cttttgactg	ctaggcgatc	tgtgctgttt	gccacggtat	gcagcaccag	4080
cgcgagatta	tgggctcgca	cgctcgactg	tcggacgggg	gactggaac	gagaagtcag	4140
gcgagccgtc	acgcccttga	ctatgccaca	tcctgagcaa	ataattcaac	cactaaacaa	4200
atcaaccgcg	tttcccggag	gtaaccaagc	ttgcgggaga	gaatgatgaa	caagagccaa	4260
caagttcaga	caatcaccct	ggccgccgcc	cagcaaattg	cggcggcggt	ggaaaaaaaa	4320
gccactgaga	tcaacgtggc	ggtggtgttt	tccgtagtgt	accgcggagg	caacacgctg	4380
cttatccagc	ggatggacga	ggccttcgtc	tccagctgcg	atatttccct	gaataaagcc	4440
tggagcgcct	gcagcctgaa	gcaagggtacc	catgaaatta	cgtcagcggt	ccagccagga	4500
caatctctgt	acgggtctga	gctaaccaac	caacagcgaa	ttattatttt	tggcggcggc	4560
ctgccagtta	tttttaataa	gcaggtaatt	ggcgccgtcg	gcgttagcgg	cggtagcgtc	4620
gagcaggatc	aattatttag	ccagtgcgcc	ctggattgtt	ttccgcatt	ataacctgaa	4680

gcgagaaggt	atattatgag	ctatcgtatg	ttccgccagg	cattctgagt	gttaacgagg	4740
ggaccgtcat	gtcgttttca	ccgccaggcg	tacgcctgtt	ttacgatccg	cgcgggcacc	4800
atgccggcgc	catcaatgag	ctgtgctggg	ggctggagga	gcaggggggtc	ccctgccaga	4860
ccataacctt	tgacggaggc	ggtgacgccg	ctgcgctggg	cgccctggcg	gccagaagct	4920
cgccccctgc	ggtgggtatc	gggctcagcg	cgtccggcga	gatagccctc	actcatgccc	4980
agctgccggc	ggacgcgccg	ctggctaccg	gacacgtcac	cgatagcgac	gatcaactgc	5040
gtacgctcgg	cgccaacgcc	gggcagctgg	ttaaagtcct	gccgttaagt	gagagaaaact	5100
gaatgtatcg	tatctatacc	cgcaccgggg	ataaaggcac	caccgccctg	tacggcggca	5160
gccgcatcga	gaaagaccat	attcgctcg	aggcctacgg	caccgtcgat	gaactgatat	5220
cccagctggg	cgtctgctac	gccacgacct	gcgacgccgg	gctgcgggaa	agcctgcacc	5280
atattcagca	gacgctgttc	gtgctggggg	ctgaactggc	cagcgatgcg	cggggcctga	5340
cccgcctgag	ccagacgatc	ggcgaagagg	agatcaccgc	cctggagcgg	cttatcgacc	5400
gcaatatggc	cgagagcggc	ccgttaaaac	agttcgtgat	cccggggagg	aatctcgcct	5460
ctgcccagct	gcacgtggcg	cgcacccagt	cccgtcggct	cgaacgcctg	ctgacggcca	5520
tggaccgcgc	gcatccgctg	cgcgacgcgc	tcaaacgcta	cagcaatcgc	ctgtcggatg	5580
ccctgtttct	catggcgcg	atcgaagaga	ctaggcctga	tgcttgcgct	tgaactggcc	5640
tagcaaacac	agaaaaaagc	ccgcacctga	cagtgcgggc	tttttttttc	ctaggcgatc	5700
tgtgctgttt	gccacggtat	gcagcaccag	cgcgagatta	tgggctcgca	cgctcgactg	5760
tcggacgggg	gactggaac	gagaagtcag	gcgagccgtc	acgcccttga	ctatgccaca	5820
tcctgagcaa	ataattcaac	cactaaacaa	atcaaccgcg	tttcccggag	gtaaccaagc	5880
ttcacctttt	gagccgatga	acaatgaaaa	gatcaaaacg	atttgagta	ctggcccagc	5940
gccccgtcaa	tcaggacggg	ctgattggcg	agtggcctga	agaggggctg	atcgccatgg	6000
acagcccctt	tgaccgggtc	tcttcagtaa	aagtggacaa	cggctctgatc	gtcgaactgg	6060
acggcaaacg	ccgggaccag	tttgacatga	tcgaccgatt	tatcgccgat	tacgcgatca	6120
acgttgagcg	cacagagcag	gcaatgcgcc	tggaggcggt	ggaaatagcc	cgtatgctgg	6180
tggatattca	cgtcagccgg	gaggagatca	ttgccatcac	taccgccatc	acgccggcca	6240
aagcggtcga	ggtgatggcg	cagatgaacg	tggaggagat	gatgatggcg	ctgcagaaga	6300
tgctgccccg	ccggaccccc	tccaaccagt	gccacgtcac	caatctcaaa	gataatccgg	6360
tgcagattgc	cgctgacgcc	gccgaggccg	ggatccgcgg	cttctcagaa	caggagacca	6420
cggctcggat	cgcgcgctac	gcgccgttta	acgccctggc	gctgttggtc	ggttcgcagt	6480
gcggccgccc	cggcgtgttg	acgcagtgtc	cgggtggaaga	ggccaccgag	ctggagctgg	6540
gcatgcgtgg	cttaaccagc	tacgccgaga	cgggtgtcgg	ctacggcacc	gaagcggtat	6600
ttaccgacgg	cgatgatacg	ccgtgggtcaa	aggcgttcct	cgcctcggcc	tacgcctccc	6660
gcgggttgaa	aatgcgctac	acctccggca	ccggatccga	agcgctgatg	ggctattcgg	6720
agagcaagtc	gatgctctac	ctcgaatcgc	gctgcattct	cattactaaa	ggcgccgggg	6780

ttcagggact	gcaaaacggc	gcggtgagct	gtatcggcat	gaccggcgct	gtgccgtcgg	6840
gcattcgggc	ggtgctggcg	gaaaacctga	tcgcctctat	gctcgacctc	gaagtggcgt	6900
ccgccaacga	ccagactttc	tcccactcgg	atattcgccg	caccgcgcgc	accctgatgc	6960
agatgctgcc	gggcaccgac	tttatTTTTct	ccggctacag	cgcggtgccg	aactacgaca	7020
acatgttcgc	cggctcgaac	ttcgatgcgg	aagattttga	tgattacaac	atcctgcagc	7080
gtgacctgat	ggttgacggc	ggcctgcgtc	cggtgaccga	ggcggaaacc	attgccattc	7140
gccagaaagc	ggcgcggggc	atccaggcgg	ttttccgcga	gctggggctg	ccgccaatcg	7200
ccgacgagga	ggtggaggcc	gccacctacg	cgcacggcag	caacgagatg	ccgccgcgta	7260
acgtggtgga	ggatctgagt	gcggtggaag	agatgatgaa	gcgcaacatc	accggcctcg	7320
atattgtcgg	cgcgtgagc	cgcagcggct	ttgaggatat	cgccagcaat	attctcaata	7380
tgctgcgcca	gcgggtcacc	ggcgattacc	tgacagacctc	ggccattctc	gatcggcagt	7440
tcgaggtggt	gagtgcggtc	aacgacatca	atgactatca	ggggccgggc	accggctatc	7500
gcatctctgc	cgaacgctgg	gcggagatca	aaaatattcc	gggcgtgggt	cagccccgaca	7560
ccattgaata	aggcgggtatt	cctgtgcaac	agacaacca	aattcagccc	tcttttacc	7620
tgaaaacccg	cgagggcggg	gtagcttctg	ccgatgaacg	cgccgatgaa	gtggtgatcg	7680
gcgtcggccc	tgcttctgat	aaacaccagc	atcacactct	gatcgatatg	ccccatggcg	7740
cgatcctcaa	agagctgatt	gccgggggtg	aagaagaggg	gcttcacgcc	cgggtggtgc	7800
gcattctgcg	cacgtccgac	gtctccttta	tggcctggga	tgcggccaac	ctgagcggct	7860
cggggatcgg	catcggtatc	cagtcgaagg	ggaccacggg	catccatcag	cgcgatctgc	7920
tgccgctcag	caacctggag	ctgttctccc	aggcgccgct	gctgacgctg	gagacctacc	7980
ggcagattgg	caaaaacgct	gcgcgctatg	cgcgcaaaga	gtcaccttcg	ccggtgccgg	8040
tggtgaacga	tcagatgggtg	cggccgaaat	ttatggccaa	agccgcgcta	tttcatatca	8100
aagagaccaa	acatgtgggtg	caggacgccg	agcccgtcac	cctgcacatc	gacttagtaa	8160
gggagtgacc	atgagcgaga	aaaccatgcg	cgtgcaggat	tatccgttag	ccaccgcgtg	8220
cccggagcat	atcctgacgc	ctaccggcaa	accattgacc	gatattaccc	tcgagaaggt	8280
gctctctggc	gaggtggggc	cgcaggatgt	gcggatctcc	cgccagaccc	ttgagtacca	8340
ggcgagatt	gccgagcaga	tgacgcgcca	tgcggtggcg	cgcaatttcc	gccgcgcggc	8400
ggagcttata	gccattcctg	acgagcgcac	tctggctatc	tataacgcgc	tgcgcccgtt	8460
ccgctcctcg	caggcgagac	tgctggcgat	cgccgacgag	ctggagcaca	cctggcatgc	8520
gacagtgaat	gccgcctttg	tccgggagtc	ggcggaaagt	tatcagcagc	ggcataagct	8580
gcgtaaagga	agctaagcgg	aggtcagcat	gccgttaata	gccgggattg	atatcggcaa	8640
cgccaccacc	gaggtggcgc	tggcgtccga	ctaccgcgag	gcgagggcgt	ttgttgccag	8700
cgggatcgtc	gcgacgacgg	gcatgaaagg	gacgcgggac	aatatcgccg	ggaccctcgc	8760
cgcgctggag	caggccctgg	cgaaaacacc	gtggtcgatg	agcgatgtct	ctcgcatcta	8820

tcttaacgaa	gccgcgccgg	tgattggcga	tgtggcgatg	gagaccatca	ccgagaccat	8880
tatcaccgaa	tcgaccatga	tcgggtcataa	cccgcagacg	ccgggcgggg	tgggcgttgg	8940
cgtggggacg	actatcgccc	tcgggcgggt	ggcgacgctg	ccggcggcgc	agtatgccga	9000
ggggtggatc	gtactgattg	acgacgccgt	cgatttcctt	gacgccgtgt	ggtgggtcaa	9060
tgaggcgctc	gaccggggga	tcaacgtggt	ggcggcgatc	ctcaaaaagg	acgacggcgt	9120
gctgggtgaac	aaccgcctgc	gtaaaacct	gccgggtggtg	gatgaagtga	cgctgctgga	9180
gcagggtcccc	gagggggtaa	tggcggcggt	ggaagtggcc	gcgccgggcc	aggtggtgcg	9240
gatcctgtcg	aatccctacg	ggatcgccac	cttcttcggg	ctaagcccgg	aagagaccca	9300
ggccatcgtc	cccacgccc	gcgccctgat	tggcaaccgt	tccgcggtgg	tgctcaagac	9360
cccgcagggg	gatgtgcagt	cgcgggtgat	cccggcgggc	aacctctaca	ttagcggcga	9420
aaagcggcgc	ggagaggccg	atgtcgccga	gggcgcggaa	gccatcatgc	aggcgatgag	9480
cgcctgcgct	ccggtacgcg	acatccgcgg	cgaaccgggc	accacgcccg	gcggcatgct	9540
tgagcgggtg	cgcaaggtaa	tggcgctcct	gaccggccat	gagatgagcg	cgatatacat	9600
ccaggatctg	ctggcggtgg	atacgtttat	tccgcgcaag	gtgcagggcg	ggatggccgg	9660
cgagtgcgcc	atggagaatg	ccgtcgggat	ggcggcgatg	gtgaaagcgg	atcgtctgca	9720
aatgcagggt	atcgcccgcg	aactgagcgc	ccgactgcag	accgaggtgg	tgggtgggcgg	9780
cgtggaggcc	aacatggcca	tcgccggggc	gttaaccact	cccggctgtg	cggcgccgct	9840
ggcgatcctc	gacctcggcg	ccggctcgac	ggatgcggcg	atcgtcaacg	cggaggggca	9900
gataacggcg	gtccatctcg	ccggggcggg	gaatatggtc	agcctgttga	ttaaaaccga	9960
gctgggcctc	gaggatcttt	cgctggcgga	agcgataaaa	aaatacccg	tgccaaaagt	10020
ggaaagcctg	ttcagtattc	gtcacgagaa	tggcgcggtg	gagttctttc	gggaagccct	10080
cagccccggc	gtgttcgcca	aagtgggtga	catcaaggag	ggcgaactgg	tgccgatcga	10140
taacgccagc	ccgctggaaa	aaattcgtct	cgtgcgccgg	caggcgaaag	agaaagtgtt	10200
tgtcaccaac	tgcctgcgcg	cgctgcgcca	ggtctcacc	ggcggttcca	ttcgcgatat	10260
cgcctttgtg	gtgctgggtg	gcggctcatc	gctggacttt	gagatcccg	agcttatcac	10320
ggaagccttg	tcgcactatg	gcgtggctgc	cgggcagggc	aatattcggg	gaacagaagg	10380
gccgcgcaat	gcggtcgcca	ccgggctgct	actggccgg	caggcgaatt	aaacgggcgc	10440
tcgcgccagc	ctctaggtac	aaataaaaaa	ggcacgtcag	atgacgtgcc	ttttttcttg	10500
tctagcgtgc	accaatgctt	ctggcgctcag	gcagccatcg	gaagctgtgg	tatggctgtg	10560
caggctgtaa	atcactgcat	aattcgtgtc	gctcaaggcg	cactcccgtt	ctggataatg	10620
ttttttgcgc	cgacatcata	acggttcttg	caaataattct	gaaatgagct	gttgacaatt	10680
aatcatccgg	ctcgtataat	gtgtggaatt	gtgagcggat	aacaatttca	cacaggaaac	10740
agaccatgac	tagtaaggag	gacaattcca	tggctgctgc	tgctgataga	ttaaacttaa	10800
cttccggcca	cttgaatgct	ggtagaaaga	gaagtccctc	ttctgtttct	ttgaaggctg	10860
ccgaaaagcc	tttcaagggt	actgtgattg	gatctggtaa	ctggggtact	actattgcc	10920

agggtggttgc	cgaaaattgt	aagggatacc	cagaagtttt	cgctccaata	gtacaaatgt	10980
gggtgttcga	agaagagatc	aatggtgaaa	aattgactga	aatcataaat	actagacatc	11040
aaaacgtgaa	atacttgcct	ggcatcactc	tacccgacaa	tttggttgct	aatccagact	11100
tgattgattc	agtcaaggat	gtcgacatca	tcgttttcaa	cattccacat	caatttttgc	11160
cccgtatctg	tagccaattg	aaaggtcatg	ttgattcaca	cgtcagagct	atctcctgtc	11220
taaagggttt	tgaagttggt	gctaaagggt	tccaattgct	atcctcttac	atcactgagg	11280
aactaggtat	tcaatgtggt	gctctatctg	gtgctaacat	tgccaccgaa	gtcgctcaag	11340
aacactggtc	tgaacaaca	gttgcttacc	acattccaaa	ggatttcaga	ggcgagggca	11400
aggacgtcga	ccataagggt	ctaaaggcct	tgttccacag	accttacttc	cacgttagtg	11460
tcatcgaaga	tggtgctggt	atctccatct	gtggtgcttt	gaagaacggt	gttgcccttag	11520
gttggtggtt	cgtcgaagggt	ctaggctggg	gtaacaacgc	ttctgctgcc	atccaaagag	11580
tcggtttggg	tgagatcatc	agattcggtc	aaatgttttt	cccagaatct	agagaagaaa	11640
catactacca	agagtctgct	ggtgttgctg	atgtgatcac	cacctgcgct	ggtggtagaa	11700
acgtcaagggt	tgctaggcta	atggctactt	ctggtaagga	cgcttgggaa	tgtgaaaagg	11760
agttgttgaa	tggccaatcc	gctcaagggt	taattacctg	caaagaagtt	cacgaatggt	11820
tggaaacatg	tggctctgtc	gaagacttcc	cattatttga	agccgtatac	caaatcgttt	11880
acaacaacta	cccaatgaag	aacctgccgg	acatgattga	agaattagat	ctacatgaag	11940
attagattta	ttggatccag	gaaacagact	agaattatgg	gattgactac	taaacctcta	12000
tctttgaaag	ttaacgccgc	tttgttcgac	gtcgacggta	ccattatcat	ctctcaacca	12060
gccattgctg	cattctggag	ggatttcggt	aaggacaaac	cttatttcga	tgctgaacac	12120
gttatccaag	tctcgcattg	ttggagaacg	tttgatgcca	ttgctaagtt	cgctccagac	12180
tttgccaatg	aagagtatgt	taacaaatta	gaagctgaaa	ttccgggtcaa	gtacgggtgaa	12240
aaatccattg	aagtcccagg	tgcatgtaag	ctgtgcaacg	ctttgaacgc	tctacaaaaa	12300
gagaaatggg	ctgtggcaac	ttccgggtacc	cgtgatattg	cacaaaaatg	gttcgagcat	12360
ctgggaatca	ggagacaaa	gtacttcatt	accgctaatt	atgtcaaaca	gggtaagcct	12420
catccagaac	catatctgaa	gggcaggaat	ggcttaggat	atccgatcaa	tgagcaagac	12480
ccttccaaat	ctaaggtagt	agtatttgaa	gacgctccag	caggatttgc	cgccggaaaa	12540
gccgccggtt	gtaagatcat	tggtattgcc	actactttcg	acttggactt	cctaaaggaa	12600
aaaggctgtg	acatcattgt	caaaaaccac	gaatccatca	gagttggcgg	ctacaatgcc	12660
gaaacagacg	aagttgaatt	catttttgac	gactacttat	atgctaagga	cgatctgttg	12720
aaatggtaac	ccgggctgca	ggcatgcaag	cttggtgtgt	ttggcggtatg	agagaagatt	12780
ttcagcctga	tacagattaa	atcagaacgc	agaagcggtc	tgataaaaca	gaatttgcct	12840
ggcggcagta	gcgcgggtgg	cccacctgac	cccatgccga	actcagaagt	gaaacgccgt	12900
agcgccgatg	gtagtgtggg	gtctcccat	gcgagagtag	ggaactgcca	ggcatcaaat	12960

```

aaaacgaaag gctcagtcga aagactgggc ctttcgtttt atctgttggt tgtcggtgaa 13020
cgctctcctg agtaggacaa atccgccggg agcggatttg aacgttgca agcaacggcc 13080
cggaggggtg cgggcaggac gcccgccata aactgccagg catcaaatta agcagaaggc 13140
catcctgacg gatggccttt ttgcgtttct acaaactcca gctggatcgg gcgctagagt 13200
atacatttaa atggtaccct ctagtcaagg ccttaagtga gtcgtattac ggactggccg 13260
tcgtttttaca acgtcgtgac tgggaaaacc ctggcgttac ccaacttaat cgcccttgca 13320
cacatcccc tttcgccagc tggcgtaata gcgaagaggc ccgcaccgat cgcccttccc 13380
aacagttgca cagcctgaat ggcgaatggc gcctgatgca gtattttctc cttacgcatc 13440
tgtgcggtat ttcacaccgc atatggtgca ctctcagtac aatctgctct gatgccgcat 13500
agttaagcca gccccgacac ccgccaacac ccgctgacga gct 13543

```

<210> 67

<211> 13543

<212> DNA

<213> Artificial sequence

<220>

<223> Plasmid pSYC0106

<400> 67

```

tagtaaagcc ctcgctagat tttaatgcgg atgttgcgat tacttcgcca actattgcga 60
taacaagaaa aagccagcct ttcgatgat atctcccaat ttgtgtaggg cttattatgc 120
acgcttaaaa ataataaaag cagacttgac ctgatagttt ggctgtgagc aattatgtgc 180
ttagtgcac taacgcttga gttaagccgc gccgcgaagc ggcgtcggct tgaacgaatt 240
gtagacatt atttgccgac taccttggtg atctcgctt tcacgtagtg gacaaattct 300
tccaactgat ctgcgcgca ggccaagcga tcttcttctt gtccaagata agcctgtcta 360
gcttcaagta tgacgggctg atactgggcc ggcaggcgct ccattgcca gtcggcagcg 420
acatccttcg gcgcgatttt gccggttact gcgctgtacc aaatgcggga caacgtaagc 480
actacatttc gctcatcgcc agcccagtcg ggcggcgagt tccatagcgt taaggtttca 540
tttagcgcct caaatagatc ctgttcagga accggatcaa agagttcctc cgccgctgga 600
cctaccaagg caacgctatg ttctcttgct ttgtgcagca agatagccag atcaatgtcg 660
atcgtggctg gctcgaagat acctgcaaga atgtcattgc gctgccattc tccaaattgc 720
agttcgcgct tagctggata acgccacgga atgatgtcgt cgtgcacaac aatggtgact 780
tctacagcgc ggagaatctc gctctctcca ggggaagccg aagtttccaa aaggtcgttg 840
atcaaagctc gccgcgttgt ttcacgaagc cttacggtca ccgtaaccag caaatcaata 900
tactgtgtg gcttcaggcc gccatccact gcggagccgt acaaattgtac ggccagcaac 960
gtcggttcga gatggcgctc gatgacgcca actacctctg atagttgagt cgatacttcg 1020

```

gcgatcaccg	cttccctcat	gatgtttaac	tttgtttttag	ggcgactgcc	ctgctgcgta	1080
acatcgttgc	tgctccataa	catcaaacat	cgacccacgg	cgtaacgcgc	ttgctgcttg	1140
gatgcccag	gcatagactg	taccccaaaa	aaacagtcac	aacaagccat	gaaaaccgcc	1200
actgcgccgt	taccaccgct	gcgttcggtc	aaggttcttg	accagttgcg	tgagcgcata	1260
cgctacttgc	attacagctt	acgaaccgaa	caggcttatg	tccactgggt	tcgtgccttc	1320
atccgtttcc	acggtgtgcg	tcacccggca	accttgggca	gcagcgaagt	cgaggcattt	1380
ctgtcctggc	tggcgaacga	gcgcaagggt	tcggtctcca	cgcatcgtca	ggcattggcg	1440
gccttgctgt	tcttctacgg	caagggtgct	tgcacggatc	tgccctggct	tcaggagatc	1500
ggaagacctc	ggccgtcgcg	gcgcttgccg	gtggtgctga	ccccggatga	agtggttcgc	1560
atcctcggtt	ttctggaagg	cgagcatcgt	ttgttcgccc	agcttctgta	tggaacgggc	1620
atgcggatca	gtgaggggtt	gcaactgcgg	gtcaaggatc	tggatttcga	tcacggcacg	1680
atcatcgtgc	gggagggcaa	gggctccaag	gatcgggcct	tgatgttacc	cgagagcttg	1740
gcacccagcc	tgcgcgagca	ggggaattaa	ttcccacggg	ttttgctgcc	cgaaaacggg	1800
ctgttctggt	gttgctagtt	tgttatcaga	atcgcagatc	cggcttcagc	cggtttgccg	1860
gctgaaagcg	ctatttcttc	cagaattgcc	atgatttttt	ccccacggga	ggcgtcactg	1920
gctcccgtgt	tgtcggcagc	tttgattcga	taagcagcat	cgctgtttc	aggctgtcta	1980
tgtgtgactg	ttgagctgta	acaagttgtc	tcagggtgtt	aatttcatgt	tctagtgtct	2040
ttgttttact	ggtttcacct	gttctattag	gtgttacatg	ctgttcatct	gttacattgt	2100
cgatctgttc	atggtgaaca	gctttgaatg	caccaaaaac	tcgtaaaagc	tctgatgtat	2160
ctatcttttt	tacaccgttt	tcactctgtc	atatggacag	ttttcccttt	gatatgtaac	2220
ggtgaacagt	tggttctact	ttgtttgtta	gtcttgatgc	ttcactgata	gatacaagag	2280
ccataagaac	ctcagatcct	tccgtattta	gccagtatgt	tctctagtgt	ggttcgttgt	2340
ttttgcgtga	gccatgagaa	cgaaccattg	agatcatact	tactttgcat	gtcactcaaa	2400
aattttgcct	caaaactggg	gagctgaatt	tttgcagtta	aagcatcgtg	tagtggtttt	2460
cttagtccgt	tatgtaggta	ggaatctgat	gtaatgggtg	ttggtatttt	gtcaccattc	2520
atttttatct	ggttgttctc	aagttcgggt	acgagatcca	tttgtctatc	tagttcaact	2580
tggaatatca	acgtatcagt	cgggcggcct	cgcttatcaa	ccaccaattt	catattgctg	2640
taagtgttta	aatctttact	tattggtttc	aaaacccatt	ggttaagcct	tttaaactca	2700
tggtagtatt	tttcaagcat	taacatgaac	ttaaattcat	caaggctaata	ctctatattt	2760
gccttgtag	ttttcttttg	tgtagttct	tttaataacc	actcataaat	cctcatagag	2820
tatttgtttt	caaaagactt	aacatgttcc	agattatatt	ttatgaattt	ttttaactgg	2880
aaaagataag	gcaatatctc	ttcactaaaa	actaattcta	atttttcgct	tgagaacttg	2940
gcatagtttg	tccactggaa	aatctcaaag	cctttaacca	aaggattcct	gatttccaca	3000
gttctcgtca	tcagctctct	ggttgcttta	gctaatacac	cataagcatt	ttccctactg	3060

atgttcatca tctgagcgta ttggttataa gtgaacgata ccgtccgttc tttccttgta	3120
gggttttcaa tctggtgggtt gagtagtgcc acacagcata aaattagctt ggtttcatgc	3180
tccgttaagt catagcgact aatcgctagt tcatttgctt tgaaaacaac taattcagac	3240
atacatctca attggtcttag gtgattttaa tcactatacc aattgagatg ggctagtcaa	3300
tgataattac tagtcctttt cttttgagtt gtgggtatct gtaaattctg ctagaccttt	3360
gctggaaaac ttgtaaattc tgctagaccc tctgtaaatt ccgctagacc tttgtgtggt	3420
ttttttgttt atattcaagt gggtataatt tatagaataa agaaagaata aaaaaagata	3480
aaaagaatag atcccagccc tgtgtataac tcactacttt agtcagttcc gcagtattac	3540
aaaaggatgt cgcaaacgct gtttgctcct ctacaaaaca gaccttaaaa ccctaaaggc	3600
ttaagtagca ccctcgcaag ctcgggcaaa tcgctgaata ttccttttgt ctccgaccat	3660
caggcacctg agtcgctgtc tttttcgtga cattcagttc gctgcgctca cggctctggc	3720
agtgaatggg ggtaaatggc actacaggcg ctttttatgg attcatgcaa ggaaactacc	3780
cataatacaa gaaaagcccc tcacgggctt ctcaggggcgt tttatggcgg gtctgctatg	3840
tggtgctatc tgactttttg ctgttcagca gttcctgccc tctgattttc cagtctgacc	3900
acttcggatt atcccgtgac aggtcattca gactggctaa tgcacccagt aaggcagcgg	3960
tatcatcaac aggtttaccc gtcttactgt cgggaattca tttaaatagt caaaagcctc	4020
cgaccggagg cttttgactg ctaggcgatc tgtgctgttt gccacggtat gcagcaccag	4080
cgcgagatta tgggctcgca cgctcgactg tcggacgggg gcactggaac gagaagtcag	4140
gcgagccgtc acgcccttga caatgccaca tcctgagcaa ataattcaac cactaaacaa	4200
atcaaccgcg tttcccggag gtaaccaagc ttgcgggaga gaatgatgaa caagagccaa	4260
caagttcaga caatcacctt ggccgcccgc cagcaaattg cggcggcggt ggaaaaaaaa	4320
gccactgaga tcaacgtggc ggtggtgttt tccgtagttg accgcggagg caacacgctg	4380
cttatccagc ggatggacga ggccttcgtc tccagctgcg atatttccct gaataaagcc	4440
tggagcgcct gcagcctgaa gcaaggatc catgaaatta cgtcagcggg ccagccagga	4500
caatctctgt acggtctgca gctaaccaac caacagcgaa ttattatttt tggcggcggc	4560
ctgccagtta tttttaatga gcaggtaatt ggcgccgtcg gcgttagcgg cggtagcgtc	4620
gagcaggatc aattattagc ccagtgcgcc ctggattgtt tttccgcatt ataacctgaa	4680
gcgagaaggc atattatgag ctatcgtatg ttccgccagg cattctgagt gttaacgagg	4740
ggaccgtcat gtcgctttca ccgccaggcg tacgcctgtt ttacgatccg cgcgggcacc	4800
atgccggcgc catcaatgag ctgtgctggg ggctggagga gcaggggggc ccctgccaga	4860
ccataaccta tgacggaggc ggtgacgccg ctgcgctggg cgccctggcg gccagaagct	4920
cgcccctgcg ggtgggtatc gggctcagcg cgtccggcga gatagccctc actcatgccc	4980
agctgccggc ggacgcgccg ctggctaccg gacacgtcac cgatagcgac gatcaactgc	5040
gtacgctcgg cgccaacgcc gggcagctgg ttaaagtcct gccgttaagt gagagaaact	5100
gaatgtatcg tatctatacc cgcaccgggg ataaaggcac caccgccctg tacggcggca	5160

gccgcatcga	gaaagaccat	attcgcgtcg	aggcctacgg	caccgtcgat	gaactgatat	5220
cccagctggg	cgtctgctac	gccacgaccc	gcgacgccgg	gctgcgggaa	agcctgcacc	5280
atattcagca	gacgctgttc	gtgctggggg	ctgaactggc	cagcgatgcg	cggggcctga	5340
cccgctgag	ccagacgatc	ggcgaagagg	agatcaccgc	cctggagcgg	cttatcgacc	5400
gcaatatggc	cgagagcggc	ccgttaaaac	agttcgtgat	cccggggagg	aatctcgcct	5460
ctgcccagct	gcacgtggcg	cgcacccagt	cccgtcggct	cgaacgcctg	ctgacggcca	5520
tggaccgcgc	gcatccgctg	cgcgacgcgc	tcaaacgcta	cagcaatcgc	ctgtcggatg	5580
ccctgtttct	catggcgcg	atcgaagaga	ctaggcctga	tgcttgcgct	tgaactggcc	5640
tagcaaacac	agaaaaagc	ccgcacctga	cagtgcgggc	tttttttttc	ctaggcgatc	5700
tgtgctgttt	gccacggtat	gcagcaccag	cgcgagatta	tgggctcgca	cgctcgactg	5760
tgggacgggg	gacttggaac	gagaagtcag	gcgagccgtc	acgcccttga	caatgccaca	5820
tcctgagcaa	ataattcaac	cactaaacaa	atcaaccgcg	tttccgggag	gtaaccaagc	5880
ttcacctttt	gagccgatga	acaatgaaaa	gatcaaaacg	atttgcagta	ctggcccagc	5940
gccccgtcaa	tcaggacggg	ctgattggcg	agtggcctga	agaggggctg	atcgccatgg	6000
acagcccctt	tgaccgggtc	tcttcagtaa	aagtggacaa	cggctctgatc	gtcgaactgg	6060
acggcaaacg	ccgggaccag	tttgacatga	tcgaccgatt	tatcgccgat	tacgcgatca	6120
acgttgagcg	cacagagcag	gcaatgcgcc	tggaggcggt	ggaaatagcc	cgtatgctgg	6180
tggatattca	cgtcagccgg	gaggagatca	ttgccatcac	taccgccatc	acgccggcca	6240
aagcggtcga	ggtgatggcg	cagatgaacg	tgggtggagat	gatgatggcg	ctgcagaaga	6300
tgcgtgcccc	ccggaccccc	tccaaccagt	gccacgtcac	caatctcaaa	gataatccgg	6360
tgcagattgc	cgctgacgcc	gccgaggccg	ggatccgcgg	cttctcagaa	caggagacca	6420
cggtcggtat	cgcgcgctac	gcgccgttta	acgccctggc	gctgttggtc	ggttcgcagt	6480
gcggccgccc	cggcgtgttg	acgcagtgct	cgggtggaaga	ggccaccgag	ctggagctgg	6540
gcatgcgtgg	cttaaccagc	tacgccgaga	cgggtgctgg	ctacggcacc	gaagcggtat	6600
ttaccgacgg	cgatgatacg	ccgtgggtcaa	aggcgttcct	cgcctcggcc	tacgcctccc	6660
gcgggttgaa	aatgcgctac	acctccggca	ccggatccga	agcgctgatg	ggctattcgg	6720
agagcaagtc	gatgctctac	ctcgaatcgc	gctgcatctt	cattactaaa	ggcgccgggg	6780
ttcagggaact	gcaaaacggc	gcggtgagct	gtatcggcat	gaccggcgct	gtgccgtcgg	6840
gcattcgggc	ggtgctggcg	gaaaacctga	tcgcctctat	gctcgacctc	gaagtggcgt	6900
ccgccaacga	ccagactttc	tcccactcgg	atattcgccg	caccgcgcgc	accctgatgc	6960
agatgctgcc	gggcaccgac	tttattttct	ccggctacag	cgcggtgccg	aactacgaca	7020
acatgttcgc	cggctcgaac	ttcgaatgcg	aagattttga	tgattacaac	atcctgcagc	7080
gtgacctgat	ggttgacggc	ggcctgcgtc	cggtgaccga	ggcggaacc	attgccattc	7140
gccagaaaagc	ggcgcgggcg	atccaggcgg	ttttccgcga	gctggggctg	ccgccaatcg	7200

ccgacgagga	ggtggaggcc	gccacctacg	cgcacggcag	caacgagatg	ccgccgcgta	7260
acgtggtgga	ggatctgagt	gcggtggaag	agatgatgaa	gcgcaacatc	accggcctcg	7320
atattgtcgg	cgcgctgagc	cgcagcggct	ttgaggatat	cgccagcaat	attctcaata	7380
tgctgcgcca	gcgggtcacc	ggcgattacc	tgcagacctc	ggccattctc	gatcggcagt	7440
tcgaggtggt	gagtgcggtc	aacgacatca	atgactatca	ggggccgggc	accggctatc	7500
gcatctctgc	cgaacgctgg	gcggagatca	aaaatattcc	gggcgtgggt	cagccccgaca	7560
ccattgaata	aggcgggtatt	cctgtgcaac	agacaacca	aattcagccc	tcttttacct	7620
tgaaaacccg	cgagggcggg	gtagcttctg	ccgatgaacg	cgccgatgaa	gtggtgatcg	7680
gcgtcgcccc	tgccctcgat	aaacaccagc	atcacactct	gatcgatatg	ccccatggcg	7740
cgatcctcaa	agagctgatt	gccggggtgg	aagaagaggg	gcttcacgcc	cgggtggtgc	7800
gcattctcgc	cacgtccgac	gtctccttta	tggcctggga	tgcgccaac	ctgagcggct	7860
cggggatcgg	catcggtatc	cagtcgaagg	ggaccacggt	catccatcag	cgcgatctgc	7920
tgccgctcag	caacctggag	ctgttctccc	aggcgccgct	gctgacgctg	gagacctacc	7980
ggcagattgg	caaaaacgct	gcgcgctatg	cgcgcaaaga	gtcaccttcg	ccggtgccgg	8040
tggtgaacga	tcagatgggtg	cggccgaaat	ttatggccaa	agccgcgcta	tttcatatca	8100
aagagaccaa	acatgtggtg	caggacgccg	agcccgtcac	cctgcacatc	gacttagtaa	8160
gggagtgacc	atgagcgaga	aaaccatgcg	cgtgcaggat	tatccgttag	ccacccgctg	8220
cccggagcat	atcctgacgc	ctaccggcaa	accattgacc	gatattacct	tcgagaaggt	8280
gctctctggc	gaggtgggcc	cgcaggatgt	gcggatctcc	cgccagaccc	ttgagtacca	8340
ggcgagatt	gccgagcaga	tgcagcgcca	tgcggtggcg	cgcaatttcc	gccgcgcggc	8400
ggagcttata	gccattcctg	acgagcgcat	tctggctatc	tataacgcgc	tgcgcccgtt	8460
ccgctcctcg	caggcggagc	tgctggcgat	cgccgacgag	ctggagcaca	cctggcatgc	8520
gacagtgaat	gccgcctttg	tccgggagtc	ggcggaagtg	tatcagcagc	ggcataagct	8580
gcgtaaagga	agctaagcgg	aggtcagcat	gccgttaata	gccgggattg	atatcggcaa	8640
cgccaccacc	gaggtggcgc	tggcgtccga	ctaccgcgag	gcgagggcgt	ttgttgccag	8700
cgggatcgtc	gcgacgacgg	gcatgaaagg	gacgcgggac	aatatcgccg	ggaccctcgc	8760
cgcgctggag	caggccctgg	cgaaaacacc	gtggtcgatg	agcgatgtct	ctcgcatcta	8820
tcttaacgaa	gccgcgccgg	tgattggcga	tgtggcgatg	gagaccatca	ccgagaccat	8880
tatcaccgaa	tcgaccatga	tcggtcataa	cccgcagacg	ccgggcgggg	tgggcgttgg	8940
cgtggggacg	actatcgccc	tcgggcggct	ggcgacgctg	ccggcggcgc	agtatgccga	9000
ggggtggatc	gtactgattg	acgacgccgt	cgatttcctt	gacgccgtgt	ggtggctcaa	9060
tgaggcgctc	gaccggggga	tcaacgtggt	ggcggcgatc	ctcaaaaagg	acgacggcgt	9120
gctggtgaac	aaccgcctgc	gtaaaaccct	gccgggtggtg	gatgaagtga	cgctgctgga	9180
gcaggtcccc	gagggggtaa	tggcggcggt	ggaagtggcc	gcgccggggc	aggtggtgcg	9240
gatcctgtcg	aatccctacg	ggatcgccac	cttcttcggg	ctaagcccgg	aagagacca	9300

ggccatcgtc	cccatcgccc	gcgccctgat	tggcaaccgt	tccgcggtgg	tgctcaagac	9360
cccgcagggg	gatgtgcagt	cgcggtgat	cccggcgggc	aacctctaca	ttagcggcga	9420
aaagcgccgc	ggagaggccg	atgtcgccga	gggcgcggaa	gccatcatgc	aggcgatgag	9480
cgcctgcgct	ccggtacgcg	acatccgcgg	cgaaccgggc	acccacgccg	gcggcatgct	9540
tgagcgggtg	cgcaaggtaa	tggcgtccct	gaccggccat	gagatgagcg	cgatatacat	9600
ccaggatctg	ctggcgggtg	atacgtttat	tccgcgcaag	gtgcagggcg	ggatggccgg	9660
cgagtgcgcc	atggagaatg	ccgtcgggat	ggcggcgatg	gtgaaagcgg	atcgtctgca	9720
aatgcagggt	atcgcccgcg	aactgagcgc	ccgactgcag	accgaggtgg	tggtagggcg	9780
cgtggaggcc	aacatggcca	tcgccggggc	gttaaccact	cccggctgtg	cggcgccgct	9840
ggcgatcctc	gacctcggcg	ccggctcgac	ggatgcggcg	atcgtcaacg	cggagggggca	9900
gataacggcg	gtccatctcg	ccggggcggg	gaatatggtc	agcctgttga	ttaaaaccga	9960
gctgggcctc	gaggatcttt	cgctggcggg	agcgataaaa	aaatacccg	tggccaaagt	10020
ggaaagcctg	ttcagtattc	gtcacgagaa	tggcgcggtg	gagttctttc	gggaagccct	10080
cagcccggcg	gtgttcgcca	aagtgggtgta	catcaaggag	ggcgaactgg	tgccgatcga	10140
taacgccagc	ccgctggaaa	aaattcgtct	cgtgcgccgg	caggcgaaaag	agaaagtgtt	10200
tgtcaccaac	tgctgcgcg	cgctgcgcca	ggtctcacc	ggcggttcca	ttcgcgatat	10260
cgcctttgtg	gtgctgggtg	gcggctcatc	gctggacttt	gagatcccg	agcttatcac	10320
ggaagccttg	tcgcactatg	gcgtggtcgc	cgggcagggc	aatattcggg	gaacagaagg	10380
gccgcgcaat	gcggtcgcca	ccgggctgct	actggccggg	caggcggaatt	aaacgggcgc	10440
tcgcgccagc	ctctaggtac	aaataaaaaa	ggcacgtcag	atgacgtgcc	ttttttcttg	10500
tctagcgtgc	accaatgctt	ctggcgtcag	gcagccatcg	gaagctgtgg	tatggctgtg	10560
caggtcgtaa	atcactgcat	aattcgtgtc	gctcaaggcg	cactcccgtt	ctggataatg	10620
ttttttgcgc	cgacatcata	acggttcttg	caaataattct	gaaatgagct	gttgacaatt	10680
aatcatccgg	ctcgtataat	gtgtggaatt	gtgagcggat	aacaatttca	cacaggaaac	10740
agaccatgac	tagtaaggag	gacaattcca	tggctgctgc	tgctgataga	ttaaacttaa	10800
cttccggcca	cttgaatgct	ggtagaaaga	gaagttcctc	ttctgtttct	ttgaaggctg	10860
ccgaaaagcc	tttcaagggt	actgtgattg	gatctggtaa	ctggggtact	actattgcca	10920
agggtggtgc	cgaaaattgt	aagggtatcc	cagaagtttt	cgctccaata	gtacaaatgt	10980
gggtgttcga	agaagagatc	aatggtgaaa	aattgactga	aatcataaat	actagacatc	11040
aaaacgtgaa	atacttgctt	ggcatcactc	taccgacaa	tttggttgct	aatccagact	11100
tgattgattc	agtcaaggat	gtcgacatca	tcgttttcaa	cattccacat	caatttttgc	11160
cccgtatctg	tagccaattg	aaaggatcatg	ttgattcaca	cgtcagagct	atctcctgtc	11220
taaagggttt	tgaagttggg	gctaaagggtg	tccaattgct	atcctcttac	atcactgagg	11280
aactaggtat	tcaatgtggg	gctctatctg	gtgctaacat	tgccaccgaa	gtcgctcaag	11340

aacactgggtc	tgaacaaca	gttgcttacc	acattccaaa	ggatttcaga	ggcgagggca	11400
aggacgtcga	ccataagggtt	ctaaaggcct	tgttccacag	accttacttc	cacgttagtg	11460
tcatcgaaga	tgttgctggt	atctccatct	gtgggtgcttt	gaagaacgtt	gttgccttag	11520
gttgtggttt	cgtcgaaggt	ctaggctggg	gtaacaacgc	ttctgctgcc	atccaaagag	11580
tcggtttggg	tgagatcatc	agattcgggtc	aaatgttttt	cccagaatct	agagaagaaa	11640
catactacca	agagtctgct	ggtggttgctg	atgtgatcac	cacctgcgct	ggtggtagaa	11700
acgtcaaggt	tgctaggcta	atggctactt	ctggtaagga	cgcctgggaa	tgtgaaaagg	11760
agttgttgaa	tggccaatcc	gctcaaggtt	taattacctg	caaagaagtt	cacgaatggt	11820
tggaaacatg	tggctctgtc	gaagacttcc	cattatttga	agccgtatac	caaatcgttt	11880
acaacaacta	cccaatgaag	aacctgccgg	acatgattga	agaattagat	ctacatgaag	11940
attagattta	ttggatccag	gaaacagact	agaattatgg	gattgactac	taaacctcta	12000
tctttgaaag	ttaacgccgc	tttgttcgac	gtcgacggta	ccattatcat	ctctcaacca	12060
gccattgctg	cattctggag	ggatttcggt	aaggacaaac	cttatttcga	tgctgaacac	12120
gttatccaag	tctcgcatgg	ttggagaacg	tttgatgcca	ttgctaagtt	cgctccagac	12180
tttgccaatg	aagagtatgt	taacaaatta	gaagctgaaa	ttccggtcaa	gtacggtgaa	12240
aaatccattg	aagtcccagg	tgcaagttaag	ctgtgcaacg	ctttgaacgc	tctacaaaa	12300
gagaaatggg	ctgtggcaac	ttccggtacc	cgtgatattg	cacaaaaatg	gttcgagcat	12360
ctgggaatca	ggagacaaa	gtacttcatt	accgctaattg	atgtcaaaca	gggtaagcct	12420
catccagaac	catatctgaa	gggcaggaat	ggcttaggat	atccgatcaa	tgagcaagac	12480
ccttccaaat	ctaaggtagt	agtatttgaa	gacgctccag	caggtattgc	cgccggaaaa	12540
gccgccgggt	gtaagatcat	tggtattgcc	actactttcg	acttggactt	cctaaaggaa	12600
aaaggctgtg	acatcattgt	caaaaaccac	gaatccatca	gagttggcgg	ctacaatgcc	12660
gaaacagacg	aagttgaatt	catttttgac	gactacttat	atgctaagga	cgatctgttg	12720
aaatggtaac	ccgggctgca	ggcatgcaag	cttggctgtt	ttggcggatg	agagaagatt	12780
ttcagcctga	tacagattaa	atcagaacgc	agaagcggtc	tgataaaaca	gaatttgcct	12840
ggcggcagta	gcgcggtggt	cccacctgac	cccatgccga	actcagaagt	gaaacgccgt	12900
agcgcggatg	gtagtgtggg	gtctcccat	gcgagagtag	ggaactgcc	ggcatcaaat	12960
aaaacgaaag	gctcagtcga	aagactgggc	ctttcgtttt	atctgttggt	tgtcggtgaa	13020
cgctctcctg	agtaggacaa	atccgccggg	agcggatttg	aacgttgcca	agcaacggcc	13080
cggaggggtg	cgggcaggac	gcccgcata	aactgccagg	catcaaatta	agcagaaggc	13140
catcctgacg	gatggccttt	ttgcgtttct	acaaactcca	gctggatcgg	gcgctagagt	13200
atacatttaa	atggtaccct	ctagtcaagg	ccttaagtga	gtcgtattac	ggactggccg	13260
tcgttttaca	acgtcgtgac	tgggaaaacc	ctggcgttac	ccaacttaat	cgcttgcag	13320
cacatcccc	tttcgccagc	tggcgtaata	gcgaagaggc	ccgcaccgat	cgcccttccc	13380
aacagttgcg	cagcctgaat	ggcgaatggc	gcctgatgcg	gtattttctc	cttacgcac	13440

tgtgcggtat ttcacaccgc atatggtgca ctctcagtac aatctgctct gatgccgcat 13500
 agttaagcca gccccgacac ccgccaacac ccgctgacga gct 13543

<210> 68

<211> 13402

<212> DNA

<213> Artificial sequence

<220>

<223> Plasmid pSYCO109

<400> 68

tagtaaaagcc ctcgctagat tttaatgcgg atggttgcgat tacttcgcca actattgcga 60
 taacaagaaa aagccagcct ttcattgatat atctcccaat ttgtgtaggg cttattatgc 120
 acgcttaaaa ataataaaaag cagacttgac ctgatagttt ggctgtgagc aattatgtgc 180
 ttagtgcatt taacgcttga gttaagccgc gccgcgaagc ggcgtcggct tgaacgaatt 240
 gttagacatt atttgccgac taccttggtg atctcgcctt tcacgtagtg gacaaattct 300
 tccaactgat ctgcgcgcga ggccaagcga tcttcttctt gtccaagata agcctgtcta 360
 gcttcaagta tgacgggctg atactgggcc ggcaggcgct ccattgcccc gtcggcagcg 420
 acatccttcg gcgcgatttt gccggttact gcgctgtacc aaatgcggga caacgtaagc 480
 actacatttc gctcatcgcc agcccagtcg ggcggcgagt tccatagcgt taaggtttca 540
 tttagcgcct caaatagatc ctgttcagga accggatcaa agagttcctc cgccgctgga 600
 cctaccaagg caacgctatg ttctcttgct tttgtcagca agatagccag atcaatgtcg 660
 atcgtggctg gctcgaagat acctgcaaga atgtcattgc gctgccattc tccaaattgc 720
 agttcgcgct tagctggata acgccacgga atgatgtcgt cgtgcacaac aatggtgact 780
 tctacagcgc ggagaatctc gctctctcca ggggaagccg aagtttccaa aaggctcgtt 840
 atcaaagctc gccgcgttgt ttcattcaagc cttacggtca ccgtaaccag caaatcaata 900
 tcaactgtgtg gcttcaggcc gccatccact gcggagccgt acaaatgtac ggccagcaac 960
 gtcggttcga gatggcgctc gatgacgcca actacctctg atagttgagt cgatacttcg 1020
 gcgatcaccg cttccctcat gatgtttaac tttgttttag ggcgactgcc ctgctgcgta 1080
 acatcgttgc tgctccataa catcaaacat cgaccacagg cgtaacgcgc ttgctgcttg 1140
 gatgcccagag gcatagactg taccctaaaa aaacagtcatt aacaagccat gaaaaccgcc 1200
 actgcgccgt taccaccgct gcgttcgggtc aagggttctg accagttgcg tgagcgcata 1260
 cgctacttgc attacagctt acgaaccgaa caggcttatg tccactgggt tcgtgccttc 1320
 atccgtttcc acggtgtgcg tcacccggca accttgggca gcagcgaagt cgaggcattt 1380
 ctgtcctggc tggcgaacga gcgcaagggt tcggtctcca cgcatcgtca ggcattggcg 1440

gccttgctgt	tcttctacgg	caaggtgctg	tgacacggatc	tgccctggct	tcaggagatc	1500
ggaagacctc	ggccgtcgcg	gcgcttgccg	gtggtgctga	ccccggatga	agtggttcgc	1560
atcctcggtt	ttctggaagg	cgagcatcgt	ttgttcgccc	agcttctgta	tggaacgggc	1620
atgcggatca	gtgaggggtt	gcaactgcgg	gtcaaggatc	tggatttcga	tcacggcacg	1680
atcatcgtgc	gggagggcaa	gggctccaag	gatcgggcct	tgatgttacc	cgagagcttg	1740
gcacccagcc	tgcgcgagca	ggggaattaa	ttcccacggg	ttttgctgcc	cgcaaacggg	1800
ctgttctggt	gttgctagtt	tgttatcaga	atcgcagatc	cggcttcagc	cggtttgccg	1860
gctgaaagcg	ctatttcttc	cagaattgcc	atgatttttt	ccccacggga	ggcgtcactg	1920
gctcccgtgt	tgtcggcagc	tttgattcga	taagcagcat	cgcctgtttc	aggctgtcta	1980
tgtgtgactg	ttgagctgta	acaagtgtgc	tcaggtgttc	aatttcatgt	tctagttgct	2040
ttgttttact	ggtttcacct	gttctattag	gtgttacatg	ctgttcatct	gttacattgt	2100
cgatctgttc	atggtgaaca	gctttgaatg	caccaaatac	tcgtaaaagc	tctgatgtat	2160
ctatcttttt	tacaccgttt	tcatctgtgc	atatggacag	ttttcccttt	gatatgtaac	2220
ggtgaacagt	tgttctactt	ttgtttgtta	gtcttgatgc	ttcactgata	gatacaagag	2280
ccataagaac	ctcagatcct	tccgtattta	gccagtatgt	tctctagtgt	ggttcgttgt	2340
ttttgcgtga	gccatgagaa	cgaaccattg	agatcatact	tactttgcat	gtcactcaaa	2400
aattttgcct	caaaactggg	gagctgaatt	tttgcagtta	aagcatcgtg	tagtgttttt	2460
cttagtccgt	tatgtaggta	ggaatctgat	gtaatggttg	ttgggtatttt	gtcaccattc	2520
atttttatct	ggttgttctc	aagttcgggt	acgagatcca	tttgtctatc	tagttcaact	2580
tggaaaatca	acgtatcagt	cgggcggcct	cgcttatcaa	ccaccaattt	catattgctg	2640
taagtgttta	aatctttact	tattggtttc	aaaaccattt	ggttaagcct	tttaaaactca	2700
tggtagtatt	tttcaagcat	taacatgaac	ttaaattcat	caaggctaatt	ctctatatatt	2760
gccttgtag	ttttcttttg	tgtagtttct	tttaataacc	actcataaat	cctcatagag	2820
tatttgtttt	caaaagactt	aacatgttcc	agatttatatt	ttatgaattt	ttttaactgg	2880
aaaagataag	gcaatatctc	ttcactaaaa	actaattcta	atttttcgct	tgagaacttg	2940
gcatagtttg	tccactggaa	aatctcaaag	cctttaacca	aaggattcct	gatttccaca	3000
gttctcgtca	tcagctctct	ggttgcttta	gctaatacac	cataagcatt	ttccctactg	3060
atgttcatca	tctgagcgta	ttggttataa	gtgaacgata	ccgtccgttc	tttccttgta	3120
gggttttcaa	tcgtgggggt	gagtagtgcc	acacagcata	aaattagctt	ggtttcatgc	3180
tccgttaagt	catagcgact	aatcgctagt	tcatttgctt	tgaaaacaac	taattcagac	3240
atacatctca	attgggtctag	gtgattttta	tcactataacc	aattgagatg	ggctagtcaa	3300
tgataattac	tagtcctttt	cctttgagtt	gtgggtatct	gtaaattctg	ctagaccttt	3360
gctggaaaac	ttgtaaattc	tgctagaccc	tctgtaaatt	ccgctagacc	tttgtgtgtt	3420
ttttttgttt	atattcaagt	ggttataatt	tatagaataa	agaaagaata	aaaaaagata	3480
aaaagaatag	atcccagccc	tgtgtataac	tcactacttt	agtcagttcc	gcagtattac	3540

aaaaggatgt	cgcaaacgct	gtttgctcct	ctacaaaaca	gaccttaaaa	ccctaaaggc	3600
ttaagtagca	ccctcgcaag	ctcgggcaaa	tcgctgaata	ttccttttgt	ctccgaccat	3660
caggcacctg	agtcgctgtc	tttttcgtga	cattcagttc	gctgcgctca	cggctctggc	3720
agtgaatggg	ggtaaattggc	actacaggcg	ccttttatgg	attcatgcaa	ggaaactacc	3780
cataatacaa	gaaaagcccc	tcacgggctt	ctcagggcgt	tttatggcgg	gtctgctatg	3840
tggtgctatc	tgactttttg	ctgttcagca	gttcctgccc	tctgattttc	cagtctgacc	3900
acttcggatt	atcccgtgac	aggtcattca	gactggctaa	tgcacccagt	aaggcagcgg	3960
tatcatcaac	aggcttacct	gtcttactgt	cgggaattca	tttaaatagt	caaaagcctc	4020
cgaccggagg	cttttgactg	ctaggcgatc	tgtgctgttt	gccacggtat	gcagcaccag	4080
cgcgagatta	tgggctcgca	cgctcgactg	tcggacgggg	gactggaac	gagaagtcag	4140
gcgagccgtc	acgcccttga	caatgccaca	tcctgagcaa	ataattcaac	cactaaacaa	4200
atcaaccgcg	tttcccggag	gtaaccaagc	ttgcgggaga	gaatgatgaa	caagagccaa	4260
caagttcaga	caatcaccct	ggccgcccgc	cagcaaattg	cggcggcggg	ggaaaaaaaa	4320
gccactgaga	tcaacgtggc	ggtggtgttt	tccgtagtgt	accgcggagg	caacacgctg	4380
cttatccagc	ggatggacga	ggccttcgtc	tccagctgcg	atatttccct	gaataaagcc	4440
tggagcgcct	gcagcctgaa	gcaaggtacc	catgaaatta	cgtcagcggg	ccagccagga	4500
caatctctgt	acggtctgca	gctaaccaac	caacagcgaa	ttattatttt	tggcggcggc	4560
ctgccagtta	tttttaatga	gcaggtaatt	ggcgccgtcg	gcgttagcgg	cggtagcggtc	4620
gagcaggatc	aattattagc	ccagtgcgcc	ctggattgtt	tttccgcatt	ataacctgaa	4680
gcgagaaggt	atattatgag	ctatcgtatg	ttccgccagg	cattctgagt	gttaacgagg	4740
ggaccgtcat	gtcgccttca	ccgccaggcg	tacgcctgtt	ttacgatccg	cgcgggcacc	4800
atgccggcgc	catcaatgag	ctgtgctggg	ggctggagga	gcaggggggtc	ccctgccaga	4860
ccataacctt	tgacggaggc	ggtgacgccg	ctgcgctggg	cgccttggcg	gccagaagct	4920
cgcccctgcg	ggtgggtatc	gggctcagcg	cgtccggcga	gatagccctc	actcatgccc	4980
agctgccggc	ggacgcgccg	ctggctaccg	gacacgtcac	cgatagcgac	gatcaactgc	5040
gtacgctcgg	cgccaacgcc	gggcagctgg	ttaaagtctt	gccgttaagt	gagagaaact	5100
gaatgtatcg	tatctatacc	cgcaccgggg	ataaaggcac	caccgccctg	tacggcggca	5160
gccgcatcga	gaaagaccat	attcgctcgc	aggcctacgg	caccgtcgat	gaactgatat	5220
cccagctggg	cgtctgctac	gccacgacct	gcgacgccgg	gctgcgggaa	agcctgcacc	5280
atattcagca	gacgctgttc	gtgctggggg	ctgaactggc	cagcgatgcg	cggggcctga	5340
cccgcctgag	ccagacgatc	ggcgaagagg	agatcaccgc	cctggagcgg	cttatcgacc	5400
gcaatatggc	cgagagcggc	ccgttaaaac	agttcgtgat	cccggggagg	aatctcgcct	5460
ctgcccagct	gcaccctgat	gcttgcgctt	gaactggcct	agcaaacaca	gaaaaaagcc	5520
cgcacctgac	agtgcgggct	ttttttttcc	taggcgatct	gtgctgtttg	ccacgggtatg	5580

cagcaccagc	gcgagattat	gggctcgcac	gctcgactgt	cggacggggg	cactggaacg	5640
agaagtcagg	cgagccgtca	cgcccttgac	aatgccacat	cctgagcaaa	taattcaacc	5700
actaaacaaa	tcaaccgcgt	ttcccggagg	taaccaagct	tcaccttttg	agccgatgaa	5760
caatgaaaag	atcaaaacga	tttgagctac	tggcccagcg	ccccgtcaat	caggacgggc	5820
tgattggcga	gtggcctgaa	gaggggctga	tcgccatgga	cagccccctt	gacccggtct	5880
cttcagtaaa	agtggacaac	ggctctgatcg	tcgaactgga	cggcaaacgc	cgggaccagt	5940
ttgacatgat	cgaccgattt	atcgccgatt	acgcgatcaa	cgttgagcgc	acagagcagg	6000
caatgcgctt	ggaggcggtg	gaaatagccc	gtatgctggt	ggatattcac	gtcagccggg	6060
aggagatcat	tgccatcact	accgccatca	cgccggccaa	agcggtcgag	gtgatggcgc	6120
agatgaacgt	ggtggagatg	atgatggcgc	tgagaagat	gcgtgcccgc	cggacccccct	6180
ccaaccagtg	ccacgtcacc	aatctcaaag	ataatccggt	gcagattgcc	gctgacgccg	6240
ccgaggccgg	gatccgcggc	ttctcagaac	aggagaccac	ggtcggtatc	gcgcgctacg	6300
cgccgtttaa	cgccctggcg	ctgttggctg	gttcgcagtg	cggccgcccc	ggcgtgttga	6360
cgcagtgtc	ggtggaagag	gccaccgagc	tggagctggg	catgcgtggc	ttaaccagct	6420
acgccgagac	ggtgtcggtc	tacggcaccg	aagcgggtatt	taccgacggc	gatgatacgc	6480
cgtggtcaaa	ggcgttcctc	gcctcggcct	acgcctcccc	cgggttgaaa	atgcgctaca	6540
cctccggcac	cggatccgaa	gcgctgatgg	gctattcggga	gagcaagtcg	atgctctacc	6600
tcgaatcgcg	ctgcatcttc	attactaaag	gcgccggggg	tcagggactg	caaaacggcg	6660
cggtgagctg	tatcggcattg	accggcgctg	tgccgtcggg	cattcggggc	gtgctggcgg	6720
aaaacctgat	cgcctctatg	ctcgacctcg	aagtggcgtc	cgccaacgac	cagactttct	6780
cccactcgga	tattcgccgc	accgcgcgca	ccctgatgca	gatgctgccg	ggcaccgact	6840
ttattttctc	cggctacagc	gcggtgccga	actacgacaa	catgttcgcc	ggctcgaact	6900
tcgatgcgga	agattttgat	gattacaaca	tcctgcagcg	tgacctgatg	gttgacggcg	6960
gcctgcgtcc	ggtgaccgag	gcggaaacca	ttgccattcg	ccagaaagcg	gcgcggggcg	7020
tccaggcggg	tttccgcgag	ctggggctgc	cgccaatcgc	cgacgaggag	gtggaggccg	7080
ccacctacgc	gcacggcagc	aacgagatgc	cgccgcgtaa	cgtggtggag	gatctgagtg	7140
cggtggaaga	gatgatgaag	cgcaacatca	ccggcctcga	tattgtcggc	gcgctgagcc	7200
gcagcggtt	tgaggatatc	gccagcaata	ttctcaatat	gctgcgccag	cgggtcaccg	7260
gcgattacct	gcagacctcg	gccattctcg	atcggcagtt	cgaggtggtg	agtgcggtca	7320
acgacatcaa	tgactatcag	gggccgggca	ccggctatcg	catctctgcc	gaacgctggg	7380
cggagatcaa	aaatattccg	ggcgtgggtt	agccccgacac	cattgaataa	ggcgggtattc	7440
ctgtgcaaca	gacaacccaa	attcagccct	cttttaccct	gaaaacccgc	gagggcgggg	7500
tagcttctgc	cgatgaacgc	gccgatgaag	tggatgatcg	cgtcggccct	gccttcgata	7560
aacaccagca	tcacactctg	atcgatatgc	cccatggcgc	gatcctcaaa	gagctgattg	7620
ccggggtgga	agaagagggg	cttcacgccc	gggtggtgcg	cattctgcgc	acgtccgacg	7680

tctcctttat	ggcctgggat	gcggccaacc	tgagcggctc	ggggatcggc	atcggtatcc	7740
agtcgaaggg	gaccacgggtc	atccatcagc	gcgatctgct	gccgctcagc	aacctggagc	7800
tgttctccca	ggcgccgctg	ctgacgctgg	agacctaccg	gcagattggc	aaaaacgctg	7860
cgcgctatgc	gcgcaaagag	tcaccttcgc	cggtgccggg	ggtgaacgat	cagatgggtgc	7920
ggccgaaatt	tatggccaaa	gccgcgctat	ttcatatcaa	agagaccaaa	catgtggtgc	7980
aggacgccga	gcccgtcacc	ctgcacatcg	acttagtaag	ggagtgacca	tgagcgagaa	8040
aaccatgcgc	gtgcaggatt	atccgtagc	cacccgctgc	ccggagcata	tcctgacgcc	8100
taccggcaaa	ccattgaccg	atattaccct	cgagaagggtg	ctctctggcg	aggtgggccc	8160
gcaggatgtg	cggatctccc	gccagaccct	tgagtaccag	gcgcagattg	ccgagcagat	8220
gcagcgccat	gcggtggcgc	gcaatttcgc	ccgcgcggcg	gagcttatcg	ccattcctga	8280
cgagcgcatt	ctggctatct	ataacgcgct	gcgcccgttc	cgctcctcgc	aggcggagct	8340
gctggcgatc	gccgacgagc	tggagcacac	ctggcatgcg	acagtgaatg	ccgcctttgt	8400
ccgggagtcg	gcggaagtgt	atcagcagcg	gcataagctg	cgtaaaggaa	gctaagcgga	8460
ggtcagcatg	ccgttaatag	ccgggattga	tatcggaac	gccaccaccg	aggtggcgct	8520
ggcgtccgac	taccgcgagg	cgagggcggt	tgttgccagc	gggatcgtcg	cgacgacggg	8580
catgaaaggg	acgcgggaca	atatcgccgg	gaccctcgcc	gcgctggagc	aggccctggc	8640
gaaaacaccg	tggtcgaatg	gcgatgtctc	tcgcatctat	cttaacgaag	ccgcgccggg	8700
gattggcgat	gtggcgatgg	agaccatcac	cgagaccatt	atcaccgaat	cgaccatgat	8760
cggtcataac	ccgcagacgc	cgggcggggg	gggcgttggc	gtggggacga	ctatcgccct	8820
cgggcggctg	gcgacgctgc	cggcggcgca	gtatgccgag	gggtggatcg	tactgattga	8880
cgacgccgtc	gatttccttg	acgccgtgtg	gtggctcaat	gaggcgctcg	accgggggat	8940
caacgtggtg	gcggcgatcc	tcaaaaagga	cgacggcggtg	ctggtgaaca	accgcctgcg	9000
taaaaccctg	ccggtggtgg	atgaagtgac	gctgctggag	caggtccccg	agggggtaat	9060
ggcggcggtg	gaagtggccg	cgccgggcca	ggtggtgctg	atcctgtcga	atccctacgg	9120
gatcgccacc	ttcttcgggc	taagcccgga	agagaccag	gccatcgctc	ccatcgccccg	9180
cgccctgatt	ggcaaccgtt	ccgcggtggt	gctcaagacc	ccgcaggggg	atgtgcagtc	9240
gcgggtgatc	ccggcgggca	acctctacat	tagcggcgaa	aagcgccgcg	gagaggccga	9300
tgctgccgag	ggcgcggaag	ccatcatgca	ggcgatgagc	gcctgcgctc	cggtacgcga	9360
catccgcggc	gaaccgggca	cccacgccgg	cggcatgctt	gagcgggtgc	gcaaggtaat	9420
ggcgtccctg	accggccatg	agatgagcgc	gatatacatc	caggatctgc	tggcggtgga	9480
tacgtttatt	ccgcgcaagg	tgcagggcgg	gatggccggc	gagtgcgcca	tggagaatgc	9540
cgtcgggatg	gcggcgatgg	tgaaagcgga	tcgtctgcaa	atgcaggtta	tcgcccgcga	9600
actgagcgcc	cgactgcaga	ccgaggtggt	ggtgggcggc	gtggaggcca	acatggccat	9660
cgccggggcg	ttaaccactc	ccggctgtgc	ggcgccgctg	gcgatcctcg	acctcggcgc	9720

cggctcgacg gatgcggcga tcgtcaacgc ggaggggagc ataacggcgg tccatctcgc	9780
cggggcgggg aatatggtca gcctgttgat taaaaccgag ctgggcctcg aggatctttc	9840
gctggcgga gcgataaaaa aatacccgct ggccaaagt gaaagcctgt tcagtattcg	9900
tcacgagaat ggcgcggtgg agttctttcg ggaagccctc agcccggcgg tgttcgccaa	9960
agtgggtgtac atcaaggagg gcgaactggt gccgatcgat aacgccagcc cgctggaaaa	10020
aattcgtctc gtgcgccggc aggcgaaaga gaaagtgttt gtcaccaact gcctgcgcgc	10080
gctgcgccag gtctcaccgc gcggttccat tcgcgatatc gcctttgtgg tgctgggtggg	10140
cggctcatcg ctggactttg agatcccgc gcttatcacg gaagccttgt cgcactatgg	10200
cgtggtcgcc gggcagggca atattcgggg aacagaaggg ccgcgcaatg cggtcgccac	10260
cgggctgcta ctggccggtc aggcgaatta aacgggcgct cgcgccagcc tctaggtaca	10320
aataaaaaag gcacgtcaga tgacgtgcct tttttcttgt ctacgtgca ccaatgcttc	10380
tggcgtcagg cagccatcgg aagctgtggt atggctgtgc aggtcgtaaa tcaactgcata	10440
attcgtgtcg ctcaaggcgc actcccgttc tggataatgt tttttgcgcc gacatcataa	10500
cggttctggc aaatattctg aaatgagctg ttgacaatta atcatccggc tcgtataatg	10560
tgtggaattg tgagcggata acaatttcac acaggaaaca gaccatgact agtaaggagg	10620
acaattccat ggctgctgct gctgatagat taaacttaac ttccggccac ttgaatgctg	10680
gtagaaagag aagttcctct tctgtttctt tgaaggctgc cgaaaagcct ttcaaggtta	10740
ctgtgattgg atctggtaac tggggtacta ctattgccaa ggtggttgcc gaaaattgta	10800
agggataccc agaagttttc gctccaatag tacaatgtg ggtgttcgaa gaagagatca	10860
atggtgaaaa attgactgaa atcataaata ctagacatca aaacgtgaaa tacttgccctg	10920
gcatactct acccgacaat ttggttgcta atccagactt gattgattca gtcaaggatg	10980
tcgacatcat cgttttcaac attccacatc aatttttgcc ccgtatctgt agccaattga	11040
aaggctcatgt tgattcacac gtcagagcta tctcctgtct aaagggtttt gaagttggtg	11100
ctaaagggtg ccaattgcta tcctcttaca tcaactgagga actaggtatt caatgtggtg	11160
ctctatctgg tgctaacatt gccaccgaag tcgctcaaga aacttggtct gaaacaacag	11220
ttgcttacca cattccaaag gatttcagag gcgagggcaa ggacgtcgac cataagggtc	11280
taaaggcctt gttccacaga ccttacttcc acgttagtgt catcgaagat gttgctggta	11340
tctccatctg tgggtgcttg aagaacgttg ttgccttagg ttgtggtttc gtcgaaggtc	11400
taggctgggg taacaacgct tctgctgcca tccaaagagt cggtttgggg gagatcatca	11460
gattcggtca aatgtttttc ccagaatcta gagaagaaac atactaccaa gagtctgctg	11520
gtgttgctga ttgatcacc acctgcgctg gtggtagaaa cgtcaagggt gctaggctaa	11580
tggctacttc tggtaaggac gcctgggaat gtgaaaagga gttgttgaat ggccaatccg	11640
ctcaagggtt aattacctgc aaagaagttc acgaatggtt ggaaacatgt ggctctgtcg	11700
aagacttccc attatttgaa gccgtatacc aaatcgttta caacaactac ccaatgaaga	11760
acctgccgga catgattgaa gaattagatc tacatgaaga ttagatttat tggatccagg	11820

aaacagacta	gaattatggg	attgactact	aaacctctat	ctttgaaagt	taacgccgct	11880
ttgttcgacg	tcgacggtac	cattatcatc	tctcaaccag	ccattgctgc	attctggagg	11940
gatttcggta	aggacaaacc	ttatttcgat	gctgaacacg	ttatccaagt	ctcgcatggt	12000
tggagaacgt	ttgatgccat	tgctaagtcc	gctccagact	ttgccaatga	agagtatggt	12060
aacaaattag	aagctgaaat	tccggtcaag	tacggtgaaa	aatccattga	agtcccaggt	12120
gcagttaagc	tgtgcaacgc	tttgaacgct	ctacccaaaag	agaaatgggc	tgtggcaact	12180
tccggtaccc	gtgatatggc	acaaaaatgg	ttcgagcatc	tgggaatcag	gagaccaaag	12240
tacttcatta	ccgctaata	tgtaaacag	ggtaagcctc	atccagaacc	atatctgaag	12300
ggcaggaatg	gcttaggata	tccgatcaat	gagcaagacc	cttccaaatc	taaggtagta	12360
gtatttgaag	acgctccagc	aggtattgcc	gccggaaaag	ccgccggttg	taagatcatt	12420
ggtattgcca	ctactttcga	cttggacttc	ctaaaggaaa	aaggctgtga	catcattgtc	12480
aaaaaccacg	aatccatcag	agttggcggc	tacaatgccg	aaacagacga	agttgaattc	12540
atTTTTgacg	actacttata	tgctaaggac	gatctgttga	aatggtaacc	cgggctgcag	12600
gcatgcaagc	ttggctgttt	tggcggatga	gagaagattt	tcagcctgat	acagattaaa	12660
tcagaacgca	gaagcggctc	gataaaacag	aatttgcctg	gcggcagtag	cgcggtggtc	12720
ccacctgacc	ccatgccgaa	ctcagaagtg	aaacgccgta	gcgccgatgg	tagtgtgggg	12780
tctccccatg	cgagagtagg	gaactgccag	gcatcaaata	aaacgaaagg	ctcagtcgaa	12840
agactgggcc	tttcgtttta	tctgttggtt	gtcgggtgaac	gctctcctga	gtaggacaaa	12900
tccgccggga	gcggatttga	acgttgcgaa	gcaacggccc	ggaggggtggc	gggcaggacg	12960
cccgccataa	actgccaggc	atcaaattaa	gcagaaggcc	atcctgacgg	atggcctttt	13020
tgcgtttcta	caaactccag	ctggatcggg	cgctagagta	tacattttaa	tggtaccctc	13080
tagtcaaggc	cttaagtga	tcgtattacg	gactggccgt	cgttttacaa	cgtcgtgact	13140
gggaaaaccc	tggcgttacc	caacttaatc	gccttgacgc	acatccccct	ttcgccagct	13200
ggcgtaatag	cgaagaggcc	cgcaccgatc	gcccttccca	acagttgcgc	agcctgaatg	13260
gcgaatggcg	cctgatgcgg	tattttctcc	ttacgcatct	gtgcggtatt	tcacaccgca	13320
tatggtgcac	tctcagtaca	atctgctctg	atgccgcata	gttaagccag	ccccgacacc	13380
cgccaacacc	cgctgacgag	ct				13402